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ABSTRACT

The Dwight D. Eisenhower Mathematics and Science Education Program of the U.S. Department of Education Program was designed to provide funding to improve the skills of teachers and the quality of instruction in science and mathematics in the nation's public and private elementary and secondary schools. This report contains listings of 142 model projects solicited from each state in the nation that are funded by the Eisenhower program. Each state was asked to provide one example of a model project by each of the three state program components: (1) state leadership activities; (2) local education funds; and (3) higher education grants. The purpose is to provide state and local program administrators, agency officials, policy makers and teachers with an overview of professional activities supported by the Eisenhower program. An introduction provides an overview of the program, describes to whom and for what type of activities funds are available, and discusses the need for model programs in professional development and inservice education. The programs are listed alphabetically by state and include the following information for each program: agency level; program name; grade levels; sponsoring agency; contact person; telephone number; purpose of program; funding scheme; number of participants; program description; major activities; and program continuation or replication. Indexes locate programs identified as: (1) gifted and talented programs; (2) disability-related programs; (3) mathematics programs; (3) mathematics and science programs; (4) rural programs; (5) science programs; (6) student programs; (7) teacher programs; (8) technology programs; and (9) urban programs. (MDH)

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STATE MODEL PROGRAMS

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INTRODUCTION

The Dwight D. Eisenhower Mathematics and Science Education Program of the U.S. Department of Education was enacted to respond to the nation's need for an increased understanding of mathematics and science by its students and a concern that there continue to be an adequate supply of mathematicians, scientists and engineers to support our economic security and national defense.

In 1989 the president and the nation's governors agreed upon six national goals that would help revitalize American education by the year 2000. The fourth of the six National Education Goals states: "By the year 2000, U.S. students will be first in the world in science and mathematics achievement." In responding to the fourth goal, the national reform movement has inspired state and local agencies and schools to use Eisenhower funds to develop and implement programs that address both teaching and learning in ways that are more consistent with the emerging national standards and requirements for productive citizenship.

The Eisenhower Program is designed to provide funding to improve the skills of teachers and the quality of instruction in science and mathematics in the nation's public and private elementary and secondary schools. The three largest parts of the program fund activities that are implemented by state and local education agencies, state agencies for higher education and institutions of higher education.

By law, all Eisenhower funds must be offered to both public and nonpublic school teachers and its programs must give consideration to increasing access to instructional and career opportunities for historically underrepresented and underserved populations. These include females, minorities, persons with disabilities, individuals with limited proficiency in English, migrants, gifted and talented students, and students from sparsely populated areas. The primary focus of the Eisenhower Program is support for inservice teacher training. In fact, the Eisenhower Program is the largest federal program to address this priority. In 1991, a study was published which outlined the unique role the program played in relation to other federal, state and local efforts and summarized the findings of a two-year national study of the state and local components of the program.[1]

This report contains listings of model projects solicited from each state in the nation which are funded by the Eisenhower program. Its purpose is to provide state and local program administrators, agency officials, policy makers and teachers with a snapshot of the breadth of professional development activities supported by a single federal program.

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[1]National study of the Education for Economic Security Act EESA Title II program. Prepared under contract for the United States Department of Education by SRI International and Policy Studies Associates, February 1991.

Overview

The science and mathematics program created in 1984 by EESA Title II was designed primarily to support training and retraining of elementary and secondary teachers. In 1988 under the Hawkins-Stafford-Elementary and Secondary School Improvement Amendments (P.L. 100-297), the program was reauthorized with some modifications as the Dwight D. Eisenhower Mathematics and Science Education Program. In 1993 the program will again be reviewed by Congress as many of the nation's elementary and secondary legislative education programs are reauthorized.

The Eisenhower Program limits the use of funds to particular subjects (science and mathematics) and types of improvement activities (principally inservice teacher training or other forms of professional development).

The program gives state and local educators a great deal of discretion in addressing professional development needs. For many school districts, this program is the largest discretionary tool they have to promote reform. This report contains 142 entries of programs funded by one of three Eisenhower program components.

I. Flow-through funds for local education agencies (LEAs): All school districts are eligible to receive an annual formula allocation of funds from their respective state agencies; in some cases (e.g., small rural districts), the funds can be received by an intermediate education agency or consortium arrangement on behalf of the LEAs.

Local districts may use Eisenhower funds for any of the following activities:

- Expansion of teacher training—This includes preservice and inservice training and retraining (training for teachers outside their areas of major preparation). Those who teach science and math in vocational courses are also eligible for support.
- Recruitment and retraining of minority teachers.
- Training related to various instructional technologies—Equipment may be purchased as part of this type of instructional program, but only in schools where fifty percent or more of their students from low-income homes and only after all training needs in the district have been met.
- Integration of higher-order thinking and problem-solving skills into the math and science curriculum.
- Grants (sometimes called minigrants) to individual teachers for projects to improve teaching skills and/or instructional materials.

II. Funding for state leadership activities: State agencies for elementary and secondary education (SEAs) receive a set-aside for "demonstration and exemplary" projects. In addition, these agencies and their counterparts responsible for higher education have small amounts that can be used for technical assistance, administration or other activities that fulfill a leadership function.

III. Grant funds for higher education institutions: State agencies for higher education (SAHEs) are allotted funds to be distributed to institutions of higher education through grant competitions or as cooperative projects (while the latter option was eliminated at the time of reauthorization as a required separate category of SAHE activity, such projects may still be supported; the

reauthorization also required that all SAHE funds be distributed by grants to institutions of higher education).[2]

Higher education funds may be used for any of the following purposes:

- Traineeship programs for new secondary teachers in math and science
- Retraining of non-science and non-math teachers
- Retraining of secondary teachers within and across the fields of math and science
- Science and math inservice opportunities for elementary, secondary and vocational teachers
- Participation of teachers in National Science Foundation institutes
- Programs that directly benefit underserved students.

This report provides a listing of actual model projects identified by states as examples of successful projects. The descriptions provide insight into the range of Eisenhower funded programs designed to meet the needs of state and local agencies.

The Need for Models

The nationwide movement to reform mathematics and science education is multifaceted, but extensive professional development for current and prospective leaders is a theme central to nearly every reform recommendation. All other aspects of the national reform agenda: revamping standards for curricula instructions or assessments; designing new curricula; attracting or training a high caliber teacher force; and changing instructional practice or delivery depend on the quality and content of teacher professional development opportunities.

To respond to the need expressed by state Eisenhower program coordinators and Department of Education officials for current information on present program activity, Triangle Coalition for Science and Technology Education staff began a data collection effort earlier this year. The Coalition initiated this task as part of a newly funded technical assistance and leadership development grant from the National Eisenhower Program. The grant's purpose is to enhance the state programs' effectiveness, and to strengthen collaboration among those who administer the Eisenhower program at the state level, a national network of business, industry, science, engineering and education organizations and the local and state network of alliances which make up the Coalition's membership.

Each state was asked to provide one example of a model project funded by each of the three state program components: (1) state leadership activities, (2) local education funds and (3) higher education grants. Every state responded with at least one example in one area. Most responded with three.

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[2]Note: This report does not contain information on projects supported by the national competitive grant component of the Eisenhower Program directly administered by the Department of Education. Abstracts of all presently active projects may be obtained from OERI staff.

The models included are quite diverse. A few examples:

- An LEA-funded science and mathematics project for girls at the secondary level in Wyoming
- A higher education-funded activity in Oklahoma at the elementary level called Natural Mathematics
- A state agency-funded systemic staff development program in Ohio called the Ohio Model for Excellence in Mathematics Projects
- A districtwide mathematics/science resource center which provides "most of the inservice training in science and mathematics" in the District of Columbia.

Model programs play a central role in the reform of science and mathematics education by addressing:

- The need for examples of quality programs which can be replicated in another state's local schools
- The concern of many educators that each local school must reinvent its education programs
- The need to stay current on what the education community values as good professional development practices.

The information presented in this report is anecdotal. It provides an excellent picture of the breadth of activities supported by a single federal program across the nation, but it is not intended as a complete picture. These model programs suggest that the same diversity which characterizes American education in general applies to the Eisenhower Program in particular. The models themselves reflect the fact that the Eisenhower Program has become an increasingly significant resource for state systemic reform activity, and for expanding and enhancing the array of opportunities available to the nation's teachers.

Concluding Observation

The Eisenhower program has a multi-part structure for providing funding support for professional development. As such, it has been regarded by many as an experiment. It combines elements of direct local financial aid, state demonstration money and higher education competitive grants. As this report shows, in this context, it is an enabling resource. Reform efforts at the district and school building level are often fragmented. The impact of Eisenhower program funds would be more powerful if the program:

- Required consideration of the developing standards in mathematics and science education in its professional development opportunities
- Required collaboration with other categorical and aid programs available at the local level to promote systemic reforms which address the national education goals.

Program Contacts

Eisenhower State Program: Dwight D. Eisenhower Mathematics and Science Education Program, U.S. Department of Education, 400 Maryland Avenue, SW, Washington, DC 20202; (202) 401-1336.

Eisenhower National Program: Dwight D. Eisenhower Mathematics and Science Education Program, U.S. Department of Education, 555 New Jersey Avenue, NW, Room 522, Washington, DC 20208; (202) 219-1496.

Technical Assistance: Triangle Coalition for Science and Technology Education, 5112 Berwyn Road, Third Floor, College Park, MD 20740; (301) 220-0879.

For specific information about the regulations governing the Eisenhower Program, visit a local federal repository library and request review copies of the *Federal Register* dated August 10, 1989 (pages 32936-n-32943), and May 21, 1992 (pages 21708-n-21711) or write to the Eisenhower State Program Office in Washington, DC to request "Excerpts from the Eisenhower Mathematics and Science Education Program Regulations." These documents outline what can and cannot be done with Eisenhower funds and will empower you with valuable knowledge.

Gary Allen, Project Director

ACRONYMS

The following acronyms and shortened names are used throughout this report:

AIMS—Activities to Integrate Mathematics and Science
AIP—American Institute of Physics
Eisenhower/Eisenhower Program—Dwight D. Eisenhower Mathematics and Science Education Program, Department of Education
LEA—local education agency
NASA—National Aeronautics and Space Administration
NCTM—National Council of Teachers of Mathematics
NSF—National Science Foundation
NSTA—National Science Teachers Association
SEA—state education agency
SSI—Statewide Systemic Initiative
STS—science, technology and society
TOPS—Task Oriented Physical Science

ALABAMA

Agency: local education agency

Program name: Eisenhower Inservice in Mathematics and Science

Grade levels: elementary school, middle/junior high school, high school

Agency: Mobile County Public School System

Contact person: Henrietta Powell

Telephone: (205) 690-8222

Purpose of program: To increase K-12 student achievement in mathematics and science by continuing to improve teacher content knowledge and demonstrate effective teaching techniques through inservice and retraining activities.

Funding: $336,888 Eisenhower funds
$225,000 other funds
$561,888 total funds

Participants: 10,881 teachers

Program description: This project is a joint venture for public and eligible private schools. The private school teachers are participating in the activities at the teacher center which were planned based on both public and private school needs assessments. There is a full array of inservice for all grade levels for the teachers.

Major activities: Topics addressed were: Computer Video Technology in Math Instruction: School Can Be Fun; How to Write a Math Problem; Money Matters; Terrific Time Tellers; Motivation and Management Workshops for Mathematics Teachers; Motivating Slow Learners and At-Risk Students in Mathematics; Starting School Right: K-2 Mathematics; Promoting Cooperative Learning in Mathematics (9-12); Motivating the Slow Learner in Mathematics for grade nine; Mathematics Standards; Utilization of Computer Software and AIMS.

Program continuation or replication: The sessions listed above will be continued if the needs continue to be identified. Additional topics will be added to meet new needs identified on each year's needs assessment.

AL

ALABAMA

Agency: state education agency

Program name: Alabama Operation Physics

Grade levels: middle school

Agency: Auburn University

Contact person: Marllin Simon

Telephone: (205) 844-4337

Purpose of program: To enhance the effectiveness of science teachers in grades four through eight through Operation Physics, a major nationwide effort partially funded by the NSF.

Funding: $232,518 Eisenhower funds
$75,000 other funds
$307,518 total funds

Participants: 395 teachers

Program description: Through the project, a series of workshops, or institutes, have been developed and validated for middle school teachers. For Alabama Operation Physics, a team of three Alabama educators received training and certification to conduct four one-week, on-campus summer institutes at Auburn University. The institute addressed the following: 1) enhancing elementary and middle school science teachers' conceptual understanding of the physical science ideas with roots in physics; 2) suggesting ways for teaching physical science ideas more effectively; 3) providing teachers with materials and support; 4) encouraging more laboratory use as a teaching strategy in elementary and middle school science classrooms; 5) correlating Alabama Operation Physics materials to the state's science curriculum, making the materials adaptable to classrooms everywhere; and 6) fostering a collaborative partnership among the education and science faculty at Auburn University, the state department of education and elementary and middle school science teachers throughout Alabama.

Major activities: Participants complete fifteen units of instruction which are content and activity-oriented and contain numerous classroom demonstrations and lab activities.

Program continuation or replication: The project will continue as approved by the NSF.

ALABAMA

Agency: higher education agency

Program name: Computational Science Program

Grade levels: elementary school, middle/junior high school, high school

Agency: University of Alabama in Huntsville

Contact person: John Ziebarth/Sharon Caruth

Telephone: (205) 895-6093 (Ziebarth)/(205) 895-6221 (Caruth)

Purpose of program: To develop, reinforce and improve the teaching of mathematics and science at both public and private high schools by providing the instruction, assistance and materials for teachers to successfully implement the high performance computing curriculum into their schools. The curriculum is designed to increase the awareness, understanding, interest and excitement in mathematics, science and computational science among teachers and students through hands-on real life experience with the use of supercomputers to solve problems in modern science.

Funding:
$324,963 Eisenhower funds
$763,200 other funds
$1,088,163 total funds

Participants: 2 administrators, 46 teachers, 4,600 students

Program description: The Computational Science Program began in 1989 with the development and implementation of the high performance computational methods in the mathematics and science teacher training program for twelve middle school and secondary teachers. This teacher training program which currently includes forty-six teachers from both public and private sectors representing twenty-one secondary and three K-8 schools, has enabled Alabama to emerge as a national leader in the transfer of this knowledge at the precollege level.

Major activities: An intense two-week training workshop for secondary teachers in high performance computational methods in mathematics and science is held during the summer. Teachers are taught the fundamentals of computational science, scientific visualization and network communications and learn to: 1) develop a computational science course; 2) write a course description and outline; 3) develop lessons for the course; and 4) develop effective teaching techniques.

Program continuation or replication: Approximately ten to fifteen Computational Science Regional Training Centers will be established over a five year period.

AK

ALASKA

Agency: local education agency

Program name: Ketchikan School District Mathematics Curriculum Reform

Grade levels: elementary school, middle/junior high school

Agency: Ketchikan High School

Contact person: Dick Sanders

Telephone: (907) 225-9815

Purpose of program: To encourage collaboration among all interested parties and expand efforts beyond the school to include the community and the school board so that the base of support for mathematics reform will become broad enough to make a real difference.

Funding: $40,000 Eisenhower funds

Participants: 6 administrators, 115 teachers

Program description: This three-year project draws its focus from the statement in NCTM's *Everybody Counts* that: "Real change involves action by everyone in mathematics education." All community groups which impact mathematics education have been involved in this reform effort. Teachers have been receiving training and working with each other collaboratively. The school board participates in a five-minute mathematics activity at the beginning of each biweekly board meeting. Parents and community members have received presentations at meetings, open houses and school functions.

Major activities: 1) 1990: eight elementary teachers and four administrators attended the NCTM national conference; 2) 1991: half of the district's elementary teachers enrolled for at least one semester of a college class on the NCTM standards; 3) 1992: eight half-day mathematics inservices were held for all elementary teachers. Eisenhower funds provided substitute teachers to allow teachers to work together and observe one another teaching mathematics. The district mathematics curriculum committee works with input from all teachers involved over the three years.

Program continuation or replication: Collaborations developed during these three years cultivated strong board, community, parental and administrator support for reform of mathematics curriculum, instruction and assessment which has provided the impetus needed to continue. This model will be replicated in the next three years in the district science program, again using Eisenhower funds.

ALASKA

Agency: state education agency

Program name: The Alaska Math Consortium

Grade levels: elementary school, middle/junior high school, high school

Agency: Alaska Department of Education

Contact person: Cathy Carney

Telephone: (907) 465-2841

Purpose of program: To enhance the mathematics skills of all Alaska students through teacher training and the exchange of successful classroom practices.

Funding:
$30,000 Eisenhower funds
$67,000 other funds
$97,000 total funds

Participants: 10 administrators, 250 teachers

Program description: The Alaska Math Consortium is a collaborative effort between Alaska school districts, the University of Alaska and the Alaska Department of Education. Each institution provides human and financial resources to support the consortium's training efforts. The department of education provides statewide coordination and promotes training opportunities and activities.

Major activities: 1) Sixteen-day intensive summer institute for teachers with minimum of three years experience teaching mathematics; 2) annual class on mathematics which is distance delivered to the classroom; 3) quarterly newsletter to all fellows who have completed a summer basic institute; and 4) special topic mathematics summer classes (one credit) for those completing the basic institute.

Program continuation or replication: Some state Eisenhower money continues to support this project. In addition, each district contributes $1,000 of support and individual teachers pay part of the cost of some activities. Each district commits to replicating the training activities of the consortium by using the teachers who have attended the summer basic institute as mathematics trainers and by developing a plan for in-district improvement of mathematics instruction.

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AK

ALASKA

Agency: higher education agency

Program name: University of Alaska Fairbanks/Denali Science Teaching Project

Grade levels: elementary school

Agency: University of Alaska Fairbanks/Denali Elementary School

Contact person: Nancy Murphy/Bruce Tillitt

Telephone: (907) 474-7341/(907) 456-7800

Purpose of program: To develop a science and mathematics focus in an elementary school through teacher development and community involvement.

Funding:
$49,368 Eisenhower funds
$20,800 other funds
$70,168 total funds

Participants: 3 administrators, 25 teachers, 2 other staff

Program description: The Denali Project began with Eisenhower funding in the 1989-90 school year. It is a grassroots reform effort to create a school where teachers are learners, parents are involved in leadership roles and children learn through inquiry and guided discovery.

Major activities: A credit course for teachers, meeting sixteen days during the school year, was the main focus of this grant. Eisenhower funds provided for release time of Denali staff, the course instructor's salary and internship experiences for the staff.

Program continuation or replication: Denali is continuing and expanding the work begun here with funding through a three-year grant of $750,000 from the RJR Nabisco Foundation. New programs include the Arctic Science Festival, parent kits, curriculum innovations, summer science camps and Alaska Native cultural integration.

ARIZONA

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AZ

Agency: local education agency

Program name: Project S.M.A.R.T. (Science and Mathematics for Rural Teachers)

Grade levels: elementary school, middle/junior high school

Agency: Mammoth/San Manuel Unified School District

Contact person: Brownie Sternberg

Telephone: (602) 385-2650

Purpose of program: To provide teachers and administrators in rural school districts in Arizona experiential inservice opportunities in mathematics and science.

Funding:
$11,068 Eisenhower funds
$500,000 other funds
$511,068 total funds

Participants: 20 administrators, 150 teachers

Program description: This project has been planned and designed to assist districts in planning staff and curriculum development and the implementation of strategies to achieve compliance with all the Arizona Essential Skills in mathematics and science and the Arizona Student Assessment program.

Major activities: The project will provide technical assistance to member districts and provide teacher, administrator and parent access to funded programs designed to improve mathematics and science instruction and learning.

Program continuation or replication: This project was the model for the recently funded regional training centers in other rural areas of Arizona.

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AZ

ARIZONA

Agency: state education agency

Program name: Arizona Mathematics and Science Academy for Elementary and Middle School Teachers

Grade levels: elementary school, middle/junior high school

Agency: Arizona Department of Education

Contact person: Mike Lang/Linda Jaslow

Telephone: (602) 542-3537

Purpose of program: To develop a systemic plan for mathematics and science reform through school/community/industry teams. The high minority teams will develop a comprehensive vision and implementation goals during a week-long summer program.

Funding:
$41,000 Eisenhower funds
$35,000 other funds
$76,000 total funds

Participants: 25 administrators, 75 teachers

Program description: Science and mathematics educators across the country have identified the why, what and how of mathematics and science reform. During the academy, program participants were involved in workshops with exemplary science and mathematics curriculum materials appropriate for grades one through eight. Materials that integrate science and mathematics with other curricula were showcased. Other components included: 1) the support system for funding and planning inservice education programs; 2) the incorporation of a technology component program into the mathematics and science curriculum; and 3) the formation of partnerships and assessment methods.

Major activities: 1) Development of a working knowledge of systems theory applied to mathematics and science education; 2) analyses of systemic model mathematics and science programs with regional, metro and rural foci; 3) in-depth experiences with curriculum modeling validated instructional practices with authentic assessments; 4) in-depth experiences with technology-based mathematics and science programs; and 5) development of an implementation plan for each school/district in attendance.

Program continuation or replication: This is the pilot year for this project. The twenty-five school or district teams will have a statewide follow-up meeting, share the implementation of their vision and be provided with technical assistance via teleconferencing.

ARIZONA

AZ

Agency: higher education agency

Program name: Arizona Science and Environmental Education Development (ASEED)

Grade levels: elementary school, middle/junior high school

Agency: Northern Arizona University

Contact person: Paul Rowland

Telephone: (602) 523-9011

Purpose of program: To develop a cadre of resource specialists in ten school districts statewide that have a large percentage of ethnic minority students. These resource specialists will assist teachers in their own districts as well as other districts by disseminating information about the Arizona Science Essential Skills and providing inservice support in environmental education curriculum development.

Funding: $73,866 Eisenhower funds

Participants: 10 administrators, 20 teachers

Program description: 1) A three-week long summer residential program for teachers at schools with large percentages of grade 4-8 ethnic minority students; and 2) three person teams from the participating schools received training in the Arizona Science Essential Skills and attended seminars focused on the intent and scope of the Environmental Education Act, content seminars in environmental science and workshops on pedagogy, curriculum development and leadership training.

Major activities: 1) Pre-planning and recruiting: the core faculty and one representative from each participating school will meet and plan the session; 2) ASEED's summer program: workshops on the Arizona Science Essential Skills, environmental science, the environmental act and training in leadership strategies and techniques; 3) development and or refinement of curricular models; and 4) follow-up and evaluation of assessment instruments used throughout the nation.

Program continuation or replication: The university plans to apply again for funds through the higher education portion of the state allocation and have a second session in 1993. Plans include using the cadre of trained teachers from the 1992 session as part of the core faculty.

ARKANSAS

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AR

Agency: local education agency

Program name: Reteaching Mathematics to Middle School Teachers

Grade levels: middle/junior high school

Agency: Center for Educational Renewal/University of Central Arkansas

Contact person: Shari Wilson

Telephone: (501) 450-3400

Purpose of program: To retrain upper elementary and middle grade teachers of mathematics in the use of manipulatives.

Funding:
$35,000 Eisenhower funds
$30,000 other funds
$65,000 total funds

Participants: 200 teachers

Program description: Participating teachers are instructed in the use of manipulatives and are required to develop lesson activities to utilize the manipulatives in classroom instruction. The teachers meet on a scheduled basis for nine sessions. At each session after the first, teachers are required to report on successes as well as failures in teaching with the manipulatives. The focus of the instruction is on problem solving and developing higher order thinking, however, there is also attention given to enhancing computational skills. These classes have been organized through the regional service cooperatives and are the result of a number of districts coming together cooperatively to fund long-term activities.

Major activities: Major activities include hands-on workshop sessions in which teachers develop and practice teaching skills with the use of manipulatives. After working with the manipulatives for several days in the classroom, teachers have the opportunity to come together and discuss strategies and problems that may have developed in the classroom. One of the major strengths of this project is the long-term duration of the project and the planned follow-up sessions for teachers.

Program continuation or replication: This project will be repeated in at least two additional regional service cooperatives during the 1992-93 school year.

ARKANSAS

AR

Agency: state education agency

Program name: Teaching Algebra With Technology

Grade levels: high school

Agency: Arkansas Department of Education

Contact person: Charles D. Watson

Telephone: (501) 682-4474

Purpose of program: To increase teacher knowledge and ability to integrate the use of technology into the teaching of high school algebra.

Funding:
$16,200 Eisenhower funds
$20,000 other funds
$36,200 total funds

Participants: 45 teachers

Program description: This is a cooperatively funded project between the state department of education, Arkansas' Project IMPACT, the local school district and the University of Central Arkansas. The project prepares teachers to utilize technology such as computers and overhead projectors to enhance the teaching of algebra. Teachers attend a two-week intensive training funded through the exemplary and dissemination funds of the department of education held on the university campus. Project IMPACT provides selected software (the Mathematics Exploration Toolkit, a spreadsheet and a function analyzer); the local district provides the classroom equipment.

Major activities: 1) A two-week training program during the summer of 1991 (repeated for additional schools in 1992); 2) follow-up sessions during the fall and spring semester to support the work of the teachers; and 3) a summer retreat to develop a curriculum document for all teachers in the project.

Program continuation or replication: The first class for teachers was conducted in the summer of 1991. An additional class was trained in the summer of 1992. A physical science course, Teaching Science with Technology, was added in the summer of 1992. Additional follow-up will be conducted during the 1992-93 school year. Additional training in both science and mathematics is planned for the summer of 1993.

ARKANSAS

▼
AR

Agency: higher education agency

Program name: Arkansas Math Crusade

Grade levels: middle school/junior high school, high school (5-12)

Agency: Arkansas Department of Higher Education

Contact person: Suzanne Mitchell

Telephone: (501) 324-9300

Purpose of program: 1) To help mathematics teachers create successful learning environments for every student; 2) to promote professional growth for teachers, involving mathematics content and instructional strategies; and 3) to provide access to mathematics manipulatives and technology in all Arkansas classrooms.

Funding:
$418,643 Eisenhower funds
$924,300 other funds
$1,342,943 total funds

Participants: 2 administrators, 504 teachers

Program description: A three-hour graduate mathematics course, Higher Order Thinking in Mathematics, is offered at eleven colleges. The course includes three follow-up sessions. The content involves fifteen modules based on NCTM standards use manipulatives and technology. The course is team taught by a college professor and a public school teacher.

Major activities: 1) Train all fifth grade through college mathematics teachers in new curriculum, effective teaching strategies, critical technology and hands-on materials; 2) equip every mathematics class so that all students have the hands-on tools and experiences needed to develop mathematics concepts; 3) pioneer business and education partnerships to benefit students as future Arkansas employees; and 4) increase the number of students enrolled in rigorous mathematics courses and increase the number of students taking mathematics every year in high school.

Program continuation or replication: The Arkansas Math Crusade was planned as a three-year project. Forty-six teachers were trained during August 1992 to teach the course with manipulatives during August 1992. This is a statewide systemic effort. The Crusade course is replicated at almost all four-year institutions in many parts of the state each semester. The Math Crusade model will be used to plan a K-4 Math/Science Crusade and a grade five through college Science Crusade.

BUREAU OF INDIAN AFFAIRS/ DEPARTMENT OF INTERIOR

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BI

Agency: higher education agency

Program name: 1991 Math/Science Summer Workshop

Grade levels: elementary school

Agency: Haskell Indian Junior College

Contact person: Angelita Felix

Telephone: (913) 759-8547

Purpose of program: To provide the participants with innovative methods and techniques for teaching mathematics and science in their schools and to provide opportunities for the exchange of ideas among their peers.

Funding: $114,145 Eisenhower funds

Participants: 9 administrators, 3 teachers, 110 students, 8 food service staff

Program description: The workshop was divided into two sections with mathematics being the topic for the first week and science the second. Presentations were made on the following mathematics topics: manipulatives, calculator use, probability and statistics, estimation strategies, language in mathematics and incorporating an Indian-based curriculum. Science topics included cooperative learning, Indian science fairs in elementary schools, science and the learning cycle, science kit production and parental involvement.

Major activities: Lectures and demonstrations of these topics by various presenters required hands-on projects and follow-up assignments using the word processor. Evening activities consisted of word processing classes, software review, basic programming and sharing of successful teaching techniques in the classroom.

Program continuation or replication: The 1992 math/science workshop will be a hands-on program with an emphasis similar to the whole language approach. Its aim will be to prepare culturally sensitive curriculum materials for Bureau of Indian Affairs' elementary teachers in mathematics and science.

CALIFORNIA

Agency: state education agency

Program name: California Science Implementation Network (CSIN)

CA

Grade levels: elementary school

Agency: California University at Irvine

Contact person: Kathy DiRanna

Telephone: (714) 856-7809

Purpose of program: To provide an assembly of teacher leaders who wish to plan schoolwide elementary programs. The network is a long-term professional development intervention designed to establish science as basic to the elementary school curriculum.

Funding:
$400,000 Eisenhower funds
$60,000 other funds
$460,000 total funds

Participants: 1,200 teachers

Program description: CSIN is a collective of 1,200 schools interested in planning and implementing elementary science schoolwide. The network offers week-long training in site-based change strategies with an emphasis on in-depth curricula matched to authentic assessment.

Major activities: 1) Summer change/strategy training, 2) year-long follow-up, 3) spring performance assessment and 4) regional craft sharing conference.

Program continuation or replication: CSIN is now part of the five-year, NSF-supported SSI. State funding is also being sought.

CALIFORNIA

Agency: higher education agency

Program name: Compton Unified Mathematics Project

Grade levels: elementary school, middle/junior high school

Agency: University of California at Irvine (UCI)

Contact person: Larry Chrystal

Telephone: (714) 856-7463

Purpose of program: To initiate an innovative mathematics professional development program that will create and support significant change in the quality of mathematics received by K-8 Chapter I students. This project seeks to change the relationship teachers and students have with mathematics, the role each plays in the learning process and the educational goals of underrepresented students.

Funding:
$347,000 Eisenhower funds
$210,000 other funds
$557,000 total funds

Participants: 3 administrators, 150 teachers, 1,800 students

Program description: The UCI/Compton Unified School District Mathematics Project is a three-year program which involves a summer mathematics institute where teachers and students are immersed in a stimulating and challenging curriculum. The strength, value and success of this project comes from its ability to stimulate change by empowering teachers with skills and curriculum that promote student academic achievement. Through this project, teachers enhance their understanding of mathematics, increase their repertoire of teaching methodologies and alternative methods of assessment and develop leadership skills. Students develop confidence in their ability to reason, mathematical thinking and self esteem as learners.

Major activities: 1) Four-week summer mathematics institute for teachers, 2) three-week mathematics project for Chapter I students, 3) follow-up meetings for teachers and 4) district-wide Family Math program for parents and students.

Program continuation or replication: After the first year, this project was judged so successful that the district acquired funds to expand this project to include high school teachers and students. For this coming summer institute, the district will double the number of teachers and students involved at the district's expense. The district has also discussed the replication of the project for use in other disciplines such as English/language arts and science.

CALIFORNIA

Agency: higher education agency

Program name: Elementary Science Leaders in a Hispanic School District

CA **Grade levels:** elementary school, middle/junior high school

Agency: California State University, Northridge

Contact person: Steve Oppenheimer

Telephone: (818) 885-3336

Purpose of program: To train 140 elementary/middle school teachers with little or no science background from a school district consisting of ninety percent underrepresented youngsters (eighty-five percent Hispanic) in hands-on science activities and leadership skills.

Funding:
$446,200 Eisenhower funds
$123,000 other funds
$596,200 total funds

Participants: 8 administrators, 140 teachers

Program description: Montebello Unified School district consists of ninety percent underrepresented youngsters (eight-five percent Hispanic), thirty-two percent of whom are limited English proficient. Through Saturday workshops, planning sessions, leadership training sessions and evaluation meetings, 140 elementary/middle school teachers (themselves fifty-five percent Hispanic) are trained in hands-on science activities with unifying themes relating to the state science framework. The teachers are also trained to provide science workshops for their colleagues, in an effort to permanently upgrade elementary science instruction in this Hispanic school district.

Major activities: Activities consist of workshops at the K-1, 2-3, 3-4 and 5-7 levels, hands-on science activities in the physical and life sciences with unifying themes relating to the state science framework. Leadership training sessions in which the teachers learn to present science workshops on their own are included.

Program continuation or replication: The science leaders created by this project will upgrade science instruction in this Hispanic school district for decades to come and a cadre of science leaders has been created that will provide ongoing district workshops. Eventually millions of students will benefit from improved science instruction.

COLORADO

Agency: local education agency

Program name: Science to Go

Grade levels: elementary school, middle/junior high school

Agency: St. Vrain Valley RE 1J School District

Contact person: Karen Bonde Hunter

Telephone: (303) 776-6200

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CO

Purpose of program: To increase participation in the teaching and learning of science in the elementary grades, St. Vrain Valley Schools have established a program of Science to Go kits. These kits are based on the stated curriculum outcomes of the district and focus on specific grade level content areas. A strong foundation of staff development is the basis and foundation for all kits.

Funding:
$60,000 Eisenhower funds
$250,000 other funds
$310,000 total funds

Participants: 18 administrators, 400 teachers, 8,000 students

Program description: The Science to Go program encompasses a series of kits for K-6 grade levels. These kits are based on district curriculum standards and outcomes. They stress an interdisciplinary hands-on, minds-on, constructivist approach to teaching and learning. There are eighty-six different kit topics with approximately eight to twenty kits for each of the topics. These kits are stocked and stored in a central science resource center and delivered daily by a district van to the requesting teacher.

Major activities: The topics for each grade level are based on current research literature, need assessments and staff evaluations. Each kit topic is based on staff and community input and is then piloted by volunteer teachers in the district before it is incorporated into the curriculum for that building. All grade level teachers and all new teachers attend staff development activities centering on the newly developed kits. All teachers are encouraged to attend workshops and conferences in order to update, revise and/or add to any existing kit.

Program continuation or replication: This project is going to be expanded to include health related topics for each elementary grade level.

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COLORADO

Agency: state education agency

Program name: Family Math

Grade levels: elementary school, middle/junior high school

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CO

Agency: Department of Education

Contact person: Mattye Pollard-Cole

Telephone: (303) 866-6763

Purpose of program: The Family Math inservices prepare parents and professional educators to establish and conduct Family Math classes in their schools and communities. Family Math classes give parents and their children opportunities to develop problem solving skills and to build an understanding of math concepts with hands-on materials.

Funding: $75 per participant total funds

Participants: 60-70 parents, teachers and administrators.

Program description: The Colorado Department of Education, supported by both SEA and LEA Eisenhower funds, sponsors several Family Math inservices in Colorado each year. At the Family Math inservice, parents and professional educators receive preparation to establish and conduct Family Math classes in their schools and communities. They receive a copy of the Family Math book which contains math activities which parents can do together with their children. They also learn specific ways to set up Family Math classes in their own schools and communities.

Major activities: Several Family Math inservice workshops each year. Each inservice serves sixty to seventy parents and professional educators. Participants are charged $75 each to help defray the cost of the workshop. Upon completion of the fifteen-hour inservice, participants return to their home communities and conduct a series of four to eight one- to two-hour classes for parents and their children.

Program continuation or replication: As stated previously, Family Math inservice workshops have been sponsored by the Colorado Department of Education since 1988. We will continue to sponsor these workshops as long as the need exists.

CONNECTICUT

Agency: local education agency

Program name: Calculators in Grades Four and Five

Grade levels: elementary school

Agency: Hartford Board of Education

Contact person: Mary S. Wilson

Telephone: (203) 722-8665

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CT

Purpose of program: To integrate calculators into regular classroom activities in areas other than computation such as data analysis, logic and critical thinking.

Funding:
$26,174 Eisenhower funds
$29,778 other funds
$55,952 total funds

Participants: 189 teachers

Program description: Teachers participated in five hours of training concentrating on problem solving and critical thinking.

Major activities: This training was done after the regular school day or on Saturdays. At the completion of the training, the teachers were given calculators to use in their respective classes.

Program continuation or replication: Approximately two-thirds of the fourth grade teachers and approximately one-half of fifth grade teachers have been trained. After the training for these two levels is finished, the project may train sixth grade teachers and ultimately, second and third grade teachers.

CONNECTICUT

Agency: higher education agency

Program name: Science, Mathematics Area Resource Teacher Center (SMART Center)

Grade levels: elementary school, middle/junior high school, high school

Agency: Sacred Heart University

CT

Contact person: Babu George

Telephone: (203) 371-7793

Purpose of program: 1) To increase the science content knowledge of teacher participants by showing: (a) the applications of science in the real world, (b) the interdisciplinary nature of science, (c) methods of motivating minorities and women to take more science and mathematics, and (d) the advancement of science in the past decade; 2) to increase the use of the computer as an instructional tool in the classroom; 3) to provide an opportunity for area teachers to gain certification or continuing education units in science and mathematics; 4) to provide assistance to teachers on how to integrate the materials presented in the SMART Center activities into the existing curricula; and 5) to provide a gathering place for teachers to exchange ideas and information.

Funding:
$40,000 Eisenhower funds
$35,275 other funds
$75,275 total funds

Participants: 55 administrators, 477 teachers

Program description: The project consists of laboratory-based workshops ranging from one day to one week. Instructors for SMART Center activities will include educators from the Institute for Chemical Education, Project SERAPHIM, PIMMS, faculty from Sacred Heart University and other area teachers distinguished for their excellence in teaching.

Major activities: The project includes many workshops and a seminar series, in addition to a materials supply center, consulting service and the Project SERAPHIM software.

Program continuation or replication: Many industries such as American Cyanamid, Southern New England Telephone and United Illuminating are involved in providing assistance. Grant proposals are pending with Southern Connecticut Gas Company and Pfizer.

CONNECTICUT

Agency: higher education agency

Program name: Fellowship Program for Math and Science Teachers, Grades 5-8

Grade levels: middle/junior high school

Agency: Project to Increase Mastery of Mathematics and Science (PIMMS)

Contact person: Robert A. Rosenbaum

Telephone: (203) 347-9411

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CT

Purpose of program: To increase the subject matter and pedagogical command of middle-school teachers and to develop their potential as resource personnel to lead workshops.

Funding:
$70,000 Eisenhower funds
$140,000 other funds
$210,000 total funds

Participants: 45 teachers

Program description: The participants (fellows) are in residence on the Wesleyan University campus for five weeks in each of two summers, with follow-up during the subsequent academic years: 1) to study mathematics and science; 2) to discuss pedagogical approaches; 3) to work on integration of mathematics and science; 4) to learn how to use educational technology such as computers and laser disks; and 5) to enhance the teaching of mathematics and science as agents of change.

Major activities: The summer training program runs for twenty-three days over a period of five calendar weeks. An additional ten hours of follow-up seminars on implementation problems during the ensuing school year are included. Classroom presentations of new content material totals seventeen hours per week. Seminar discussions on pedagogical implications and implementations of the content material totals five hours per week. Field trips, four hours per week; evening seminars, two hours per week; hands-on lab experiences in mathematics/science integration, six hours per week; and homework, six hours per week; bring the total to forty hours per week for the program.

Program continuation or replication: The program is designed as a two-year program incorporating the summer training program and the follow-up seminars each year. A new cadre of fellows is taken in each year.

DELAWARE

Agency: local education agency

Program name: Math Your Way

Grade levels: elementary school

Agency: Delaware Department of Public Instruction

Contact person: Bill Geppert

▼ **Telephone:** (302) 739-4885

DE

Purpose of program: To provide a philosophical background and hands-on opportunity to adopt a project that integrates the new NCTM standards in grades K-2.

Funding: $20,000 Eisenhower funds

Participants: 3 administrators, 50 teachers

Program description: Over a period of three years each K-2 teacher in Cape Henlopen will have been through a thirty-hour training session for Math Your Way. Additionally, a sixteen-hour follow-up session is required after teaching it for three months.

Major activities: Inservice program to make teachers comfortable with hands-on teaching methods and teaching mathematics in a new way.

Program continuation or replication: Program plans include putting all K-2 teachers in the district through over forty-six hours of this program and then doing reunion workshops to refresh teachers.

DELAWARE

Agency: state education agency

Program name: Rookie Science Teacher Workshop

Grade levels: elementary school, middle/junior high school, high school

Agency: Delaware Department of Public Instruction

Contact person: Jack Cairns

Telephone: (302) 739-3742

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DE

Purpose of program: To provide instruction in skills that new teachers need to maintain their employment within the context of teaching science.

Funding: $25,000 Eisenhower funds

Participants: 60 teachers

Program description: Rookie (first year) teachers receive an introduction to teaching in Delaware through a weekend workshop. Themes used over the past few years include the Delaware Instructional Model, the Delaware Performance Appraisal System and classroom management. All instruction is carried out by exemplary Delaware elementary and secondary science teachers. Each instructor teaches a science lesson for 40-58 minutes, followed by a discussion with the assembled rookie teachers on a theme. All content, experiments, handouts, problem sheets, demonstrations are provided for the rookies who focus upon the delivery of the content and the follow-up discussions with the instructors.

Major activities: The workshop is held over a fifteen-hour weekend with follow-up meetings about one month after the workshop. The follow-up is designed to be one-on-one in the rookies' classrooms.

Program continuation or replication: This program began as a secondary project. It has been replicated for elementary and this year provided four strands: early childhood, intermediate, middle school and high school.

DELAWARE

Agency: higher education agency

Program name: Marine Science Leadership Workshop

Grade levels: middle/junior high school

Agency: Delaware Department of Public Instruction

Contact person: Jack Cairns

▼ **Telephone:** (302) 739-3742

DE

Purpose of program: To provide content knowledge to middle school science teachers concerning our marine/aquatic environment.

Funding:
$20,000 Eisennower funds
$5,000 other funds
$25,000 total funds

Participants: 1 administrator, 40 teachers

Program description: To provide fifty hours of content specific learning ideas for teachers of grades 5-8 on the topic of marine science.

Major activities: This program was an introduction to environmental education programs and projects that relate to the marine/aquatic topics such as Project Wild and For Sea. It provided background and content relating these marine topics to science, mathematics, social studies, language arts and fine arts.

Program continuation or replication: We plan to continue with another population group such as elementary teachers or high school physical science teachers.

DISTRICT OF COLUMBIA

Agency: local education agency

Program name: Micro-based Probeware Project

Grade levels: middle school/junior high school

Agency: District of Columbia Public Schools, Curriculum and Instruction, Science Office

Contact person: V. Susie Oliphant/Amy Lee

Telephone: (202) 576-7818

Purpose of program: To enhance instruction in physical science through infusing technology and laboratory experiences.

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DC

Funding:
$20,000 Eisenhower funds
$60,000 other funds
$80,000 total funds

Participants: 2 administrators, 12 teachers, 910 students

Program description: Probeware is utilized with the Apple computer to teach physical concepts such as heat, temperature, light and sound to eighth grade students. Probes are used to collect data, while the computer is used for data analysis and graphing. The project is operating in four junior high schools. The science department in each school has its own computer laboratory in a science room. In two of the schools, the lab is permanently set up; in the other two the computers are removed at the end of each day.

Major activities: The teachers were trained in an NSF-sponsored program at the University of Maryland. The school system has held one summer training institute since then to upgrade and review the program and to train new school teams. Semi-annual meetings are held for the teachers to come together and exchange ideas and concerns. A two-week training institute is scheduled for the summer of 1992 to add new teachers at existing school projects and to add on two new schools.

Program continuation or replication: Two new schools will be added to the program during the summer of 1992 and at least one additional teacher will be trained at existing sites.

DISTRICT OF COLUMBIA

Agency: local education agency

Program name: Mathematics/Science Resource Center

Grade levels: elementary school, middle/junior high school, high school

Agency: District of Columbia Public Schools, Curriculum and Instruction, Science Office

Contact person: Gloria White/V. Susie Oliphant

Telephone: (202) 576-7818

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DC

Purpose of program: To provide a training site for science and mathematics and a resource library to which teachers can go to examine new printed, media and audio-visual materials.

Funding:
$177,215 Eisenhower funds
$200,000 other funds
$377,215 total funds

Participants: 3 administrators, 2 teachers, 1 secretary

Program description: The resource center is the school district's exemplary project and is the site for most of the inservice training in science and mathematics. Inservice courses, workshops, meetings, seminars and some competitions are held at the center.

Major activities: Special presentations in science and mathematics are provided for teachers and students, such as Science and Technology Week observances and multicultural activities and experiences. Training in the use of new and innovative curriculum materials, technology and media is scheduled at the center. The resource library houses examples of printed curricular materials and technology. Media and equipment is provided for teacher preview and review.

Program continuation or replication: Eisenhower funds are utilized for staff salaries and for the purchase of materials and equipment used in training activities. The building space, utilities and some salaries are contributed as in-kind services from the school system. Continuation beyond federal support would mean that the school system would have to pick up the total costs of operating the center. The District of Columbia school system is willing at this time to do that. There are no plans, however, to replicate the center within the system.

DISTRICT OF COLUMBIA

Agency: higher education agency

Program name: New Connections: Mathematics

Grade levels: elementary school

Agency: Gallaudet University

Contact person: Charles Dietz

Telephone: (202) 651-5036

Purpose of program: 1) To produce videotapes on strands in the new District of Columbia Public Schools elementary mathematics curriculum to support teacher inservice training; and 2) to provide Family Math training to District of Columbia Public School teachers so that they can establish Family Math centers in their schools.

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DC

Funding:
$38,772 Eisenhower funds
$9,283 other funds
$48,055 total funds

Participants: 1 administrator, 49 teachers

Program description: The following activities were included in the program: 1) three videotapes on probability and statistics, patterns and function and algebra were produced to support inservice training of teachers in the new District of Columbia Public Schools elementary mathematics curriculum; and 2) training is provided to groups of elementary mathematics teachers to become Family Math coordinators in their own schools.

Major activities: 1) Design and production of three videotapes; 2) conduct Family Math training to selected elementary teachers; and 3) follow-up with new Family Math coordinators to assist in establishing programs in their own schools.

Program continuation or replication: 1) Up to eight additional videotapes are planned; 2) completed videotapes will be used in District of Columbia in inservice workshops for at least three years; 3) completed videotapes will be used with teachers of deaf students in inservice workshops nationally; and 4) Family Math programs will be established and continued in various District of Columbia elementary schools.

FLORIDA

Agency: local education agency

Program name: Marine Science Curriculum Institute

Grade levels: elementary school, middle/junior high school, high school

Agency: Panhandle Area and Educational Cooperative

Contact person: Fay Younge

Telephone: (904) 769-6131

Purpose of program: To make the institute more relevant to the students of today.

Funding: $6,962 Eisenhower funds

FL

Participants: 4 administrators, 3 teachers

Program description: A review and revision of the existing marine science instructional materials utilizing the local resources and various other agencies who have an interest in marine science was facilitated.

Major activities: Revise instructional material and plan activities.

Program continuation or replication: Several community resource people participated in the institute. The community members were selected to provide representation of the various parts of school communities. They provided extremely valuable insight into the needs of the students and the expectations of the community. The project is an ongoing one that has extended well beyond the institute funded through the Eisenhower Program. The Marine Science Curriculum Institute was hosted by Franklin County, with a consultant from the Panhandle Area Educational Cooperative.

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FLORIDA

Agency: local education agency

Program name: Effective Use of Graphing Calculators and Computers for Teaching High School Algebra

Grade levels: middle/junior high school, high school

Agency: Alachua County Schools

Contact person: Barbara Minter

Telephone: (904) 336-3622

Purpose of program: To train high school Algebra I and II teachers in the use of graphing calculators and computers.

Funding:
$2,150 Eisenhower funds
$2,500 other funds
$4,650 total funds

Participants: 4 administrators, 25 teachers, 800 students

Program description: Teachers are engaged in hands-on activities to learn new teaching methods as well as mathematical content. This project improved instructional strategies and techniques in the use of calculators and computers which in turn provided more effective learning for students. This increased the success rate of Algebra I and II students.

Major activities: Dr. Mary G. Kantowski of the University of Florida conducted five days of inservice training for algebra teachers in the instructional use of computers and graphing calculators. She received an Eisenhower grant to provide consultant services and Alachua County Schools provided substitute teachers for teachers and software.

Program continuation or replication: There will be continuous inservice for new teachers in Alachua County. The project has expanded into the middle school algebra classes of the county. Also, teachers will take knowledge back to their specific school sites.

FLORIDA

Agency: higher education agency

Program name: Partnerships for Advanced Learning of Science for At-Risk Students, Grades 4-6

Grade levels: elementary school

Agency: Nancy Romance

Contact person: Florida Atlantic University

Telephone: (407) 367-3581

Purpose of program: To provide an effective curriculum intervention strategy in science for at-risk elementary students.

▼
FL

Funding:
$43,504 Eisenhower funds
$75,000 other funds
$118,504 total funds

Participants: 24 teachers, 500 students

Program description: Elementary teachers received training in science core concepts and methodologies. A local support network was established.

Major activities: The instructional design incorporated basic skills introduction within an expanded, daily two-hour time block for science instruction.

Program continuation or replication: This project was intensified for 1991-92 with the addition of teacher mentors and a staff development plan for the local education agency.

GEORGIA

Agency: local education agency

Program name: Coastal Ecology

Grade levels: high school

Agency: Savannah/Chatham County Public Schools

Contact person: Harris K. Lentini

Telephone: (912) 651-7050

Purpose of program: To train teachers to implement during the 1992-93 school year a new high school curriculum course of study, coastal ecology, by providing content background and field study experiences for teachers of coastal ecology and other K-12 teachers of science.

Funding: $7,500 Eisenhower funds

Participants: 18 teachers

Program description: A course of study was developed to train teachers to use the newly developed curriculum guide for a new high school course, coastal ecology, and to update knowledge and skills essential for teaching the course. Teachers participated in field study activities such as water chemistry testing to learn how to gather specific data for analysis.

Major activities: The first step in identifying general concepts to be included in coastal ecology came from community representatives invited to attend an open session designed for this reason. Activities of the summer teacher workshop included lecture and demonstration of specific data gathering tools (use of seines, plankton net, sampling techniques), trips to field study sites (sandhill area, swamps, rivers, barrier islands and marsh) and the development of specific teaching activities to implement the new curriculum guide. The guide was developed locally, but was based on state objectives for ecology, a high school course of study.

Program continuation or replication: The project was designed to provide training to high school science teachers who will use the curriculum guide. In addition to those teachers, the course was open to any teacher of science because the subject matter is of importance to the community. Because of the continuing need to provide this subject matter to area teachers the course will be offered at regular intervals.

GEORGIA

Agency: state education agency

Program name: Science Education Network for the Southeast
(previously Science Alliance for Rural Georgia)

Grade levels: elementary school, middle/junior high school

Agency: Georgia Southern Museum/Georgia Southern University

Contact person: Delma Presley

Telephone: (912) 681-5444

Purpose of program: To develop an inservice training program for K-8 teachers in rural southern Georgia using the Georgia Southern Museum and its resources to provide basic instruction in physical and earth science through a process-oriented, hands-on approach.

▼
GA

Funding: $184,809 Eisenhower funds
$414,000 other funds
$598,809 total funds

Participants: 3 administrators, 200+ teachers

Program description: Georgia Southern University, in collaboration with local industry and regional public schools, designed, developed and conducted inservice training programs for K-8 teachers in rural southern Georgia using Georgia Southern Museum and its resources to provide both stationery items (at the museum site) and mobile items such as portable planetaria and other hands-on science teaching exhibits.

Major activities: 1) Provide graduate level workshops taught by interdisciplinary teams of academic scientists, industrial scientists, college faculty and classroom teachers; 2) design workshops on weather/climate, mathematics, space, electricity/magnetism, oceanography, simple machines, life science, rocks/minerals and measurement; 3) provide grade appropriate manuals and curriculum guides keyed to state-developed quality core curriculum concepts; 4) develop hands-on portable exhibit units; and 5) prepare a videotape on selected activities and experiments conducted during project.

Program continuation or replication: 1) Additional school systems will be invited to send teachers to summer training programs; 2) additional exhibit/demonstration units will be developed annually; and 3) intermediate educational agencies are considering plans to replicate and provide this training on a regional basis.

GEORGIA

Agency: higher education agency

Program name: Explorations in Geometry and Measurement

Grade levels: elementary school, middle/junior high school, high school

Agency: Armstrong State College

Contact person: Jane Barnard

Telephone: (912) 927-5317

Purpose of program: To upgrade the teaching and learning of K-12 geometry.

Funding: $16,735 Eisenhower funds

Participants: 16 teachers

Program description: Classroom activities, complemented by resource persons from business and industry who use geometry and measurement, feature hands-on teaching and learning of mathematics to present geometry and measurement as in a problem solving format were used.

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GA

Major activities: 1) Hands-on problems solving with manipulatives; 2) applications from business and industry; and 3) follow-up seminars with participants sharing activities, successes and frustrations.

Program continuation or replication: To repeat summer-winter 1992-93.

HAWAII

Agency: higher education agency

Program name: Developmental Approaches in Science and Health (DASH)

Grade levels: elementary school, middle/junior high school

Agency: University of Hawaii, Curriculum and Research Development Group (CRDG)

Contact person: Donald Young

Telephone: (808) 956-7863

Purpose of program: To develop a sequential and integrated science, health and technology curriculum for K-6 elementary schools by a consortium of university and school groups.

Funding:
$47,580 Eisenhower funds
$1,008,556 other funds
$1,056,136 total funds

▼ HI

Participants: 1,500+ teachers

Program description: Eight institutions of higher education and eighteen elementary schools joined together in the DASH consortium to design, develop and disseminate a new sequential and integrated K-6 science, health and technology curriculum. Leadership in material design was provided by the CDRG. The consortium members were involved in the development, testing, adapting and revising of DASH materials. Complementary materials will also be developed that reflect regional differences and local school requirements.

Major activities: The major activity was to develop curriculum materials for elementary grades. The program activities included: meetings with interested schools and district personnel; development of the sequential DASH curriculum; ongoing test piloting of the materials, including inservice training activities; field visitation for input and refinement of the materials; and staff support, provision of pilot materials and networking through a DASH newsletter.

Program continuation or replication: The DASH Program will be offered to all interested schools in Hawaii. Follow-up inservice training will be conducted by the state department of education using Eisenhower funds, program funds and by the University of Hawaii. Follow-up field support will be provided by the CDRG.

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HAWAII

Agency: higher education agency

Program name: Hawaii Algebra Project

Grade levels: middle/junior high school

Agency: University of Hawaii, Curriculum and Research Development Group (CRDG)

Contact person: Sidney L. Rachlin/Barbara Dougherty

Telephone: (808) 956-6216

Purpose of program: To serve two distinct audiences: inservice elementary teachers who want to upgrade their mathematics content and inservice secondary school teachers who want to change their teaching methods and the curriculum.

Funding: $56,500 Eisenhower funds
$20,000 other funds
$76,000 total funds

Participants: 185 teachers

▼
HI

Program description: The Hawaii Algebra Learning Project has four major components and two distinct audiences. The first component develops a model for staff development through a problem solving approach to Algebra I which incorporated the NCTM standards. The second component provides funding for teachers trained in this problem solving approach to meet and learn more about the development of the CRDG curriculum, Algebra I: A Process Approach. The third component provides funding to enable twenty public and private school teachers to visit classes in which innovative curricula and methods of instruction are being modeled. The fourth component is designed for elementary teachers who want to upgrade or update their mathematics content knowledge.

Major activities: University CRDG staff coordinate the offerings of the course, Process Algebra, for secondary teachers as well as the school visitation component with the department of education staff. Teachers are identified to serve as a cadre team of teacher researchers who will take an in-depth look at their teaching practices and use of the curriculum. These teachers are monitored by trained observers and interviewers.

Program continuation or replication: Implementation of Algebra I: A Process Approach will be offered to all interested schools in Hawaii. Follow-up inservice training will be conducted by the state department of education using Eisenhower funds. The course, Process Algebra will also be offered during the mathematics summer institute in August, 1992.

IDAHO

Agency: local education agency

Program name: Twin Falls Mathematics Network

Grade levels: elementary school, middle/junior high school, high school

Agency: Twin Falls High School

Contact person: LaRon Smith

Telephone: (208) 733-6551

Purpose of program: To set up a district-wide inservice and staff development program for all K-12 teachers of mathematics that will replicated for the surrounding district collaborative project.

Funding:
$15,000 Eisenhower funds
$10,000 other funds
$25,000 total funds

Participants: 20 administrators, 150 teachers, 6,792 students (impacted)

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ID

Program description: The mathematics network was a design for a district-wide inservice, staff development, training and retraining program in mathematics education. Monthly meetings designed to articulate district mathematics curriculum, instructional strategies and appropriate equipment use. All teachers of mathematics were involved.

Major activities: Train teachers to change classroom instructional strategies aligned with NCTM standards; and to use manipulatives and calculators appropriately. The program coordinated inservice to take advantage of mathematics teacher leaders in the district.

Program continuation or replication: The district plans to assume more and more of the funding and administration responsibility for continuation of project. This is being done and the model has been replicated in twenty other school districts in Idaho. The project has created the South Idaho Council of Mathematics Teachers.

IDAHO

Agency: state education agency

Program name: Idaho School for the Deaf and the Blind

Grade levels: elementary school, middle/junior high school, high school

Agency: Idaho State School for the Deaf and the Blind

Contact person: Pat Nelson

Telephone: (208) 934-4457

Purpose of program: To improve ways of teaching handicapped students.

Funding:
$6,000 Eisenhower funds
$6,000 other funds
$12,000 total funds

Participants: 3 administrators, 24 teachers, 130 students

Program description: The project provides innovative ways of teaching in a hands-on environment to handicapped students. Teachers attend mainstream college courses to improve content knowledge and courses to learn to teach through an interpreter. Program included continued inservice on new trends.

Major activities: The program included: 1) training in applied mathematics and science (physics); 2) how to use an interpreter to teach math and science; 3) provision for opportunities for teachers to attend state and national conferences; and 3) monthly curriculum inservice workshops.

Program continuation or replication: This project will continue until the school is capable of providing their students with the necessary quality of instruction.

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IDAHO

Agency: higher education agency

Program name: MASTER Center, Albertson College of Idaho

Grade levels: elementary school, middle/junior high school, high school

Agency: Albertson College of Idaho

Contact person: Boyd Henry

Telephone: (208) 459-5210

Purpose of program: To inservice rural teachers in all the new approaches desired in mathematics and science education.

Funding:
$30,557 Eisenhower funds
$9,037 other funds
$39,594 total funds

Participants: 20 administrators, 350 teachers, 8,750 students (impacted)

Program description: This is an example of a rural mathematics and science training and retraining program designed to inservice teachers in all the new approaches desired in mathematics and science education. It focuses on rural teachers who work with students that in Idaho are traditionally underrepresented and underserved.

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ID

Major activities: Twenty different course offerings dealing with hands-on approaches to teaching mathematics and science were planned and requested by participating teachers. Courses were designed around NCTM standards, NSTA directions and state of Idaho guides.

Program continuation or replication: Participating schools have rejuvenated their staff development program. The courses were taken to the rural sites and thus prompted requests for continuation of the project at six sites during the summer of 1992.

ILLINOIS

Agency: state education agency

Program name: Scientific Literacy Target School Program

Grade levels: elementary school, middle/junior high school

Agency: Tri-County Educational Service Center (ESC) #10

Contact person: Judy Judy

Telephone: (815) 467-4048

Purpose of program: To provide a vehicle for improving mathematics and science education through the implementation and support of a cadre model of leadership and training.

Funding: $16,974 Eisenhower funds
$150,000 other funds
$166,974 total funds

Participants: 15 administrators, 200+ teachers

Program description: A cadre of seventy teachers have been trained using Eisenhower funds and Illinois State Scientific Literacy funds to deliver inservice and staff development programs for mathematics and science teachers in Will, Grundy and Kendall Counties in Illinois.

Major activities: Major activities of the project have been in the delivery of mathematics and science seminars, conferences and workshops by cadre members. Specialized training has also been provided through the educational service center's programs by consultants and staff. K-8 teachers are the primary focus of training activities in both public and non-public schools. Certain programs are aimed at the participation of parents of underrepresented groups in an effort to multiply the effects of training designed to meet the needs of these groups.

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Program continuation or replication: ESC #10 has submitted a plan for FY 1993 that includes the continuation of the services described above. The educational service center has already received a FY 1993 scientific literacy award in the amount of $150,000 which will be coordinated with Eisenhower funding.

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ILLINOIS

Agency: state education agency

Program name: Integration of Mathematics and Science Into the Curriculum

Grade levels: elementary school, middle/junior high school, high school

Agency: Aurora West Unit School District 129

Contact person: Sherry Eagle

Telephone: (217) 782-3810

Purpose of program: To integrate mathematics and science into the curriculum across all subject areas by emphasizing staff communication and cooperation.

Funding: $24,106 Eisenhower funds

Participants: 24 administrators, 401 teachers, 7,410 students

Program description: Through business collaboration and coordination of funds from state, federal and private grant sources, the school district employs a technology director and science coaches to provide mathematics and science inservice training at all grade levels.

Major activities: Major activities include: 1) a technology conference which includes non-public participants and presenters directed by the technology coordinator; 2) science coaches to present ongoing inservice at the building level; 3) a technology prep course which integrated science and mathematics into the vocational education program; and 4) professional growth sessions including technology, science applications, Math Their Way and science "make and take" workshops.

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IL

Program continuation or replication: The project will continue in the same fashion next year. It continues to improve. The school district would be happy to replicate or assist other school districts in organizing a similar program if requested.

ILLINOIS

Agency: higher education agency

Program name: Secondary Chemistry Instrumentation Laboratory (SCIL) Network

Grade levels: high school

Agency: Western Illinois University

Contact person: Mundiyath Venugopalan

Telephone: (309) 298-1769

Purpose of program: To enable additional inservice training for secondary chemistry teachers from twenty-nine counties in west central Illinois.

Funding: $65,000 Eisenhower funds

Participants: 54 teachers

Program description: Training was provided by means of one-week summer workshops. Following the modular approach developed in previous workshops, the teachers improved knowledge and skills from problem solving and classroom demonstrations in the new areas by hands-on experience and videodisc computer-interactive lessons.

Major activities: Microcomputers were used as the technologically advanced classroom aid for the teachers. Computer-interfacing kits and software were provided for the teachers to take to their schools. Laboratory instrumentation is purchased through the grant and is available for use by SCIL teachers and students only.

Program continuation or replication: This project was funded again in FY 1991 for $70,000. Also, two additional networks, (six sites) were modeled after the existing network of Western Illinois University, Knox College and Sangamon State University. An additional amount of $240,000 has been recommended to start these new networks.

INDIANA

Agency: higher education agency

Program name: Mathematics Achievement through Problem Solving (MAPS)

Grade levels: high school

Agency: Perdue University

Contact person: William Kyle

Telephone: (317) 494-2359

Purpose of program: To improve the problem solving ability and concept development of high school mathematics students.

Funding: $60,000 Eisenhower funds

Participants: 45 administrators, 92 teachers, 4,000 students

Program description: MAPS is a professional development program for teachers that makes extensive demands on participating school corporations. Specifically, MAPS is a set of curriculum materials for a secondary school general mathematics course. Eisenhower funds have supported several years of development. Workshops continue to promote the use of MAPS and provide data to document gains in learning by students in MAPS classes.

Major activities: The project used numerous means of contact with participating teachers: inservice education, in the form of week-long institutions and two-day workshops; user conferences; and user and writer work sessions. Other forms of contact included newsletters, exchange visits, consultations, classroom visits and an electronic conference.

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IN

Program continuation or replication: Since MAPS was recognized by the National Diffusion Network as an exemplary program (developer/demonstrator project), it will provide training, materials and technical assistance to those who adopt it for their school program.

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IOWA

Agency: higher education agency

Program name: Preparing Elementary Teachers to Guide Sixth Grade Minority Students in Teaching Mathematical Problem Solving Skills to Elementary Students

Grade levels: elementary school (2nd grade)

Agency: University of Northern Iowa, Department of Teaching

Contact person: John Tarr

Telephone: (319) 273-2066

Purpose of program: 1) To integrate problem solving into the elementary mathematics curriculum; 2) to introduce peer teaching where younger students are taught by older students; and 3) to encourage minority students to enter the teaching professions.

Funding: $27,343 Eisenhower funds

Participants: 8 administrators, 32 teachers, 80 students

Program description: Eighty Davenport, Iowa sixth grade students, their teachers and cooperating second grade teachers were trained in peer teaching techniques and the use of problem solving in mathematics instruction. These techniques were then implemented in classrooms where the sixth graders teach mathematical problem solving to second graders. The sixth grade students are participants in a minorities in teaching program designed to attract minority children to the teaching profession and to nurture them in this career choice.

Major activities: Four full-day Saturday workshops are held during the school year to teach teachers to: 1) integrate problem solving into their mathematics curriculum; 2) use technology in mathematics instruction; and 3) introduce peer teaching techniques where older students help younger students. Selected sixth grade students attend three of the four workshops for a half-day, being prepared to teach problem solving to second graders. Between workshops, teachers and students implement the peer teaching in the classroom.

Program continuation or replication: The project has received a second Eisenhower grant to replicate the program for a second set of teachers and students in the Davenport, Iowa schools during the 1991-92 school year.

KANSAS

Agency: local education agency

Program name: Southeast Kansas Math/Science Consortium

Grade levels: elementary school, middle/junior high school, high school

Agency: Southeast Kansas Education Service Center

Contact person: David DeMoss

Telephone: (316) 724-6281

Purpose of program: To provide participating school districts with staff development activities which focus on state standards, hands-on activities and using technology for all of their staff in the area of mathematics and science.

Funding:
$71,213 Eisenhower funds
$30,000 other funds
$101,213 total funds

Participants: 245 administrators, 2,584 teachers, 35,564 students

Program description: The consortium, comprised of thirty-three districts, provides staff development activities for all grade level teachers in the areas of mathematics and science. These activities include inservices, college course work and technical assistance. The major thrusts are: 1) to encourage the use of hand-on methodologies; 2) to encourage the use of technology in instruction; and 3) to integrate higher order analytical and problem solving skills in the mathematics and science curriculum.

Major activities: Staff development activities and summer coursework in the use of hands-on activities and techniques in the area of mathematics and science are a major thrust for the consortium. These sessions for elementary and secondary teachers encourage teaching in inquiry-oriented programs. Training and assistance to districts in the use of computer telecommunications in teaching science units was included. Assistance to districts in training staff on both state and NCTM standards, as well as outcome-based curriculum, has also been addressed.

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KS

Program continuation or replication: Continuation of the program is planned for the coming school year.

KANSAS

Agency: state education agency

Program name: Math Training Program

Grade levels: elementary school, middle/junior high school

Agency: Olathe District Schools

Contact person: Alison Banikowski

Telephone: (913) 780-7000

Purpose of program: To provide staff development to improve the quality of mathematics teaching in all K-8 Olathe classrooms and to improve all student learning.

Funding: $24,697 Eisenhower funds
$8,000 other funds
$32,697 total funds

Participants: 8 administrators, 350 teachers, 10,000 students

Program description: Teachers are active participants in weekly staff development sessions. They learn how to use a variety of manipulatives: 1) to represent mathematics concepts, relationships and operations; 2) to incorporate the teaching of problem solving and thinking skills into the content areas of mathematics; and 3) to incorporate the use of calculators into the teaching of mathematics.

Major activities: The voluntary workshops are held after school from 4 P.M. to 5 P.M. on a weekly basis. The success can be attributed to the teachers immediate implementation of the techniques and materials they learned about. Highlights of session topics include: Problem Solving, Probability and Statistics with Stat Rat, Calculators in the Classrooms, Number Sense, Number Boards, Mental Math, Kansas Associates for Teaching of Science Camp, Alternate Assessment and Math: It's a Hit–Counting Down the Top 40 Manipulative.

Program continuation or replication: Olathe Schools will continue next year to retrain teachers with the latest teaching techniques and strategies and the newest materials/lessons available. The sessions will continue to provide information and support of Kansas math standards, assessment and instructional tools available to teachers. With the continuation of this carefully designed training program, teachers will expand their repertoire of instructional practices.

KANSAS

Agency: higher education agency

Program name: Integrating Technology, Science and Mathematics Education Program

Grade levels: elementary school, middle/junior high school, high school

Agency: Wichita State University

Contact person: Mary Butel/Cathy Yeotis

Telephone: (316) 689-3322

Purpose of program: 1) To integrate private sector technical representatives and organizations into instructional programs of mathematics, science and technology in elementary, middle and high schools; and 2) to provide support and encouragement for students to acquire and apply knowledge and skills in mathematics, science and technology.

Funding:
$40,000 Eisenhower funds
$1,013,354 other funds
$1,053,354 total funds

Participants: 26 administrators, 110 teachers, 67,000 students

Program description: The program will utilize existing private sector and educational relationships and networks in Wichita and Sedgwick Counties and develop and pilot new instructional units in four participating schools involving technical representatives and organizations in a variety of activities.

Major activities: 1) Develop mathematics, science and technology teams; 2) design integrated instructional units for grade levels with teacher teams; 3) establish innovative activities with the private sector for Sedgwick County classrooms; 4) develop and implement a mathematics coaching program by training 100 representatives from local business to deliver 6,000 hours of assistance to students per year; 5) develop a summer internship program for teachers in local business; and 6) hold summer workshops to train teachers in use of new integrated units.

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KS

Program continuation or replication: Disseminate integrated mathematics, science and technology programs to area schools and incorporate information about and experience with those programs into teacher education programs at Wichita State University.

KENTUCKY

Agency: local education agency

Program name: Problem Solving in Mathematics with Manipulatives

Grade levels: elementary school, middle/junior high school, high school

Agency: Caldwell County School System

Contact person: Donna L. Brown

Telephone: (502) 365-6601

Purpose of program: To train teachers in the application of analytical and higher order thinking skills through the use of manipulatives in problem solving in K-12 mathematics.

Funding:
$13,282 Eisenhower funds
$14,000 other funds
$27,283 total funds

Participants: 6 administrators, 57 teachers, 2,231 students

Program description: The program addressed K-4, 5-8 and K-12 respectively for the three years of the project. The program primarily involved integrating problem solving into the mathematics curriculum and the required teacher training in order to include problem solving strategies in instruction.

Major activities: Teachers participated in: 1) an orientation to the mathematics framework under reform (including NCTM standards); 2) acquiring a research base; 3) mathematics curriculum development; 4) local, regional and national inservice in use of manipulatives; and 5) setting up orientation, application and maintenance of a manipulative-based program.

Program continuation or replication: The project will be continued, as the mathematics curriculum will be rewritten according to the state development curriculum framework. It will closely align Kentucky's seventy-five valued outcomes with classroom instruction and be assessed through the new Kentucky assessment program of authentic, continuous and performance-based testing. A new year plan will provide for the same involvement of hands-on science.

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KY

KENTUCKY

Agency: state education agency

Program name: Activity Centered Elementary Science Program (ACES), Year Two Implementation Project

Grade levels: elementary school, middle/junior high school

Agency: Kentucky Department of Education

Contact person: Tricia Kerr

Telephone: (502) 564-2106

Purpose of program: To increase the quality of science instruction by emphasizing activity-centered teaching and strategies to reduce traditional barriers for elementary teachers: availability of materials, training, technical and administrative support.

Funding: $22,420 Eisenhower funds
$315,000 other funds
$337,420 total funds

Participants: 148 administrators, 696 teachers, 17,500 students

Program description: ACES is both a curriculum project and a professional development project. It utilizes a multiple resources approach emphasizing the hands-on, minds-on approach in elementary science education.

Major activities: Training of teachers in science content, science process skills, alternative assessments and teaching strategies focusing on student centered activities.

Program continuation or replication: Continuation of the establishment and maintenance of demonstration and training centers will occur at regional sites across the state. Teacher training will take place at these centers and teachers will be involved in leadership roles within the program. A focus of the centers is to reach geographic areas and students who have traditionally been underserved.

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KY

KENTUCKY

Agency: higher education agency

Program name: Learning Algebra Through Technology, Investigations and Cooperative Experiences (LATTICE: An Algebra Project)

Grade levels: middle/junior high school, high school

Agency: University of Louisville

Contact person: Robert N. Ronau

Telephone: (502) 588-0593

Purpose of program: To improve the teaching and learning of algebra as an answer to the problem of students failing to pursue mathematics studies beyond basic courses.

Funding:
$30,331 Eisenhower funds
$25,000 other funds
$55,331 total funds

Participants: 4 administrators, 48 teachers, 4 students

Program description: LATTICE is unique in that it bases the teaching of algebra on the concept of functions. This focus on functions necessitates a change in the way other topics are addressed in the algebra curriculum. The concept of functions is introduced through data collection and naturally evolves into the use of variables to represent data.

Major activities: In the first phase of the ongoing algebra project (recently completed with funds from local sources) eight student teachers were placed with their supervising teachers in the project. During the 1990-91 school year, the teachers, student teachers and university faculty field-tested the lessons. The third component began in the summer of 1991 with a short retreat to analyze the results of the project to prepare materials for dissemination and finalize plans for the summer institute.

Program continuation or replication: After field-testing, reviewing and revising these lessons, the final drafts were assembled into notebooks. The notebooks then were disseminated to other teachers through workshops, teacher inservices and professional organization presentations. The Kentucky Council of Teachers of Mathematics (KCTM) has issued a call for innovative mathematics lessons to place in the newly created *KCTM Journal*. These lessons were refined for submission to this referenced journal.

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LOUISIANA

Agency: local education agency

Program name: Dwight D. Eisenhower Mathematics and Science Education Program

Grade levels: elementary school, middle/junior high school, high school

Agency: Bossier Parish School Board

Contact person: Mary Wynn

Telephone: (318) 746-0226

Purpose of program: To improve the quality of classroom instruction. The ultimate goal of this project is to move students toward the achievement of goal four of America 2000.

Funding:
$47,692 Eisenhower funds
$19,615 other funds
$67,307 total funds

Participants: 51 administrators, 571 teachers, 17,650 students

Program description: Characterized by a collaborative effort among representatives of higher education, public and non-public schools, NASA, NSF, the wildlife and fisheries department, the forestry service and Louisiana Department of Education, the Bossier Eisenhower project is a comprehensive, unique staff development model. Rather than a top-down mandate approach, the decision to provide a specific type of training or demonstration begins with an assessment of faculty and student needs at each school. Committees of exemplary teachers, administrators and college/university instructors interact to create the framework for the total program and a parish-wide Eisenhower advisory council assists in refining, implementing and evaluating the project.

Major activities: Expansion and improvement of inservice: 1) to encourage the understanding and use of technology, hands-on discovery approaches, strategies to foster critical thinking and cooperative learning; and (2) changing methods and curricula to reach the at-risk and to challenge the gifted. Teacher incentive grants to foster teacher creativity and initiative in the planning, presenting and evaluating of classroom experiences were included. Higher education collaboration to help teachers keep abreast of current content and strategies and, in turn, have the selected teachers serve as mentors and presenters for other educators was also implemented.

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LA

Program continuation or replication: This project will continue to be expanded and improved. Although collaborative efforts involving several agencies are taking place, the move is toward additional community awareness and participation.

LOUISIANA

Agency: state education agency

Program name: Toward Excellence in Mathematics and Science Education

Grade levels: elementary school, middle/junior high school, high school

Agency: Louisiana State Department of Education

Contact person: Brenda S. Argo

Telephone: (504) 342-3375

Purpose of program: To provide inservice training in exemplary science, mathematics and/or critical thinking skills to teachers across the state particularly in extremely rural and inner city areas.

Funding: $120,000 Eisenhower funds
$45,000 other funds
$165,000 total funds

Participants: 40 administrators, 1,716 teachers, 30,627 students

Program description: Based on stated needs in mathematics and science, seventy exemplary programs were identified. A total of 1,716 teachers were trained in one or more identified exemplary programs. Materials for classroom implementation were also furnished for these trained teachers in 784 public schools and 95 non-public schools.

Major activities: 1) Identifying needs of LEAs in the areas of science and mathematics; 2) identifying exemplary mathematics, science or critical thinking skills programs to address these needs; 3) providing inservice training to teachers in one or more of these exemplary programs; 4) establishing LEA and regional networks of teachers using similar programs; and 5) identifying centers which can prove to be educational resources for teachers; (i.e., marine science centers; the Louisiana Universities Marine Science Consortium, Aquarium of the Americas, wildlife centers and zoos).

Program continuation or replication: The 1992-93 fiscal year will be the third year of the project. Networking for the different programs has been established and allows teachers to work together for better program implementation. Additionally, teachers will be trained in identified exemplary programs. New exemplary programs will be introduced into the state.

LOUISIANA

Agency: higher education agency

Program name: Certification and Mathematics Training Program for School Teachers

Grade levels: elementary school, middle/junior high school/high school

Agency: NcNeese State University, Computer Science and Statistics

Contact person: George F. Mead, Jr.

Telephone: (318) 475-5121

Purpose of program: To retrain elementary and middle school teachers for certification at either the upper elementary (middle school) or secondary levels. Only mathematics content courses were offered.

Funding: $41,822 Eisenhower funds

Participants: 30 teachers

Program description: The program, entitled Certification and Mathematics Training Program for School Teachers, was directed by Dr. George F. Mead, Jr., chairman, Department of Mathematics, Computer Science and Statistics at NcNeese State University. The project is a retraining program that offers courses in the fall and spring designed to retrain elementary and middle school teachers for certification at either the upper elementary (middle school) or secondary level. Mathematics content courses were offered at the rate of four courses per program year, two in the fall and two in the spring, with each participant enrolled in one course per semester. The program was effective in retraining, updating and reinforcing mathematics skills of teachers.

Major activities: 1) To offer four courses in mathematics content, two in the fall (algebra and calculus) and two in the spring (discrete mathematics and calculator applications); 2) to enroll at least thirty students each semester; 3) to offer certification counseling; 4) to recruit teachers from both public and private schools; 5) to make presentations at local inservice meetings; 6) to enroll teachers who teach underrepresented/underserved groups; and 7) to communicate with local education agencies on a regular basis and enlist their assistance in recruiting teachers.

Program continuation or replication: Through the competitive awards process, this project was again awarded FY 1992-93 funds for continuation of this project through August 14, 1993.

MAINE

Agency: state education agency

Program name: Cross-cultural Camp

Grade levels: middle/junior high school

Agency: Maine Department of Education

Contact person: Jacqueline P. Mitchell/Barney Berube

Telephone: (207) 287-6980

Purpose of program: To encourage minority students' science and mathematics aspirations and career choices and to demonstrate that science and mathematics are exciting and fun.

Funding:
$12,000 Eisenhower funds
$3,000 other funds
$15,000 total funds

Participants: 2 administrators, 6 teachers, 60 students

Program description: The program attracted sixty children from across Maine. They reflected diverse cultures most notably Passamaquoddie, Penobscots, Latinos, Vietnamese, Cambodians, Chinese and Thai. The intent of the retreat was to trigger positive attitudes about mathematics and science among these minority children. They were provided with high-powered instructors and generous attention to nurture cultural diversity in an atmosphere of informality and camaraderie among the cultures represented. Follow-up with teachers will provide assistance to them to continue the supportive measures.

Major activities: Experiences such as ocean culture through mathematics and science investigations were addressed. Three instructor/researchers on staff helped steer the direction of future retreats and helped students remain focused daily on emerging attitudes. Researchers have highlighted some of the more revealing comments recorded by the children in their daily journals.

Program continuation or replication: Staff members prepared the study data secured from this project as a prologue to a teacher training event to occur in June of 1993. Teachers of mathematics and science who provide direct instruction to language minority children at the middle or secondary level will be invited to a six-day graduate level institute. The three-credit course, Teaching Math and Science to the Language Minority Learners will address the culture concerns for at-risk students who may otherwise find themselves excluded from the potential career market.

MAINE

Agency: higher education agency

Program name: Innovative Science In Primary and Middle School Classrooms

Grade levels: elementary school, middle/junior high school

Agency: Colby College

Contact person: Jay B. Labov

Telephone: (207) 872-3329

Purpose of program: To establish partnerships between college faculty and local teachers.

Funding:
$30,000 Eisenhower funds
$7,800 other funds
$37,800 total funds

Participants: 94 teachers

Program description: Faculty and teaching associates from Colby and teachers in grades K-8 in the five districts surrounding the college have worked together to improve teachers' backgrounds and understanding of science. Each partnership (learning team) has been established between a Colby scientist and several teachers.

Major activities: Participating teachers indicated their interests and need for science training. Colby scientists then contacted teachers whose needs matched their expertise and the team determined its agenda, learning goals, time commitment and objectives. Teacher participants were exposed to the equipment library housed at Waterville Area Resources Center and received training in the Science Helper (K-8), a CD-ROM containing over 900 hands-on science activities. Borrowing privileges in Colby's libraries also were provided to participating teachers.

Program continuation or replication: Program continuation depends on availability of Eisenhower funds. However, with a continuing grant from the Howard Hughes Medical Institute and the recent award of an NSF grant to the Maine higher education department, continuation of the program is likely.

MARYLAND

Agency: local education agency

Program name: Elementary Science Content Training

Grade levels: elementary school

Agency: Montgomery County Public Schools

Contact person: Lucinda Ross Sullivan

Telephone: (301) 279-3371

Purpose of program: 1) To provide elementary teachers with science content training related to topics in the elementary science curriculum; and 2) to provide a review of the science outcomes and strategies for including outcome-oriented assessments in instruction.

Funding: $33,714 Eisenhower funds

Participants: 100 teachers

Program description: Three training workshops of eight sessions each were held. The instructors were successful classroom teachers who received special training on how to inservice adult learners. Topics were chosen from earth, life and the physical sciences.

Major activities: The emphasis of the presentations were on developing epistemological understanding of science knowledge and the relationship between concepts, theories and the investigative nature of science. Content and processes were illustrated with developmentally appropriated activities suitable for small group interaction of students.

Program continuation or replication: Three years of this project have been completed. All system elementary teachers have been served.

MARYLAND

Agency: state education agency

Program name: Dwight D. Eisenhower Spring Conference

Grade levels: elementary school, middle/junior high school, high school

Agency: Maryland State Department of Education

Contact person: Cindy Hannon

Telephone: (410) 333-2305

Purpose of program: To encourage changes in instruction by training K-12 teachers from across the state to use integrated mathematics/science lessons.

Funding: $34,000 Eisenhower funds

Participants: 400 administrators and teachers

Program description: A statewide mathematics and science conference for over 400 educators is conducted every spring for two days. The major goal of the program is to provide sessions on the integration of mathematics, science, environmental education and technology.

Major activities: 1) Keynote speakers addressed national reform efforts as well as the issue of increasing participation in mathematics and science by women and minority students; and 2) interdisciplinary workshop sessions were conducted by classroom teachers incorporating a hands-on laboratory approach and the use of technology, whenever possible.

Program continuation or replication: The statewide conference is held annually in the spring. The theme varies each year with state needs.

MARYLAND

Agency: higher education agency

Program name: Summer Biology Institute

Grade levels: high school

Agency: University of Maryland at College Park

Contact person: Arthur N. Popper

Telephone: (301) 405-6884

Purpose of program: To bring together high school teachers with university teaching faculty to explore new methods, current research and new strategies for more effective teaching of introductory biology.

Funding:
$100,000 Eisenhower funds
$103,628 other funds
$203,628 total funds

Participants: 26 teachers

Program description: The program is structured to: 1) present and discuss the important concepts in biology using new and innovative teaching strategies based on current research; 2) emphasize the use of experimentation in the biology laboratory as a teaching/learning tool; 3) develop new classroom and laboratory teaching materials suitable for use in high schools; and 4) provide the opportunity for participants to obtain college credits acceptable for teacher certification.

Major activities: 1) An intensive five-week summer program to introduce high school faculty to the experimental nature of biology, new research and the innovative teaching approaches use in college courses; 2) investigative laboratories based on experimental methods; 3) field trips related to using resources as career counseling; 4) lunch seminars presented by university faculty dealing with current research; 5) an outreach project, Zoology on Wheels, brings university laboratory equipment, specimens and teaching assistants directly to the school; and 6) one-day symposium on innovative teaching methods where participants from the program present their efforts to other biology teachers from an eight county area.

Program continuation or replication: The university's department of zoology intends to continue and expand the program. It will sponsor and host the one-day symposium as a yearly event. Plans are in process to expand the geographic area served for the next summer program and seek NSF funding to bring students to the university for summer research experiences allied with the summer teacher institute.

MA

MASSACHUSETTS

Agency: local education agency

Program name: Bringing About Systemic Change in the Teaching of Science at the Elementary School Level

Grade levels: elementary school, middle/junior high school

Agency: New Bedford Public Schools

Contact person: M. Daniel Germano

Telephone: (508) 997-4511, ext. 3201

Purpose of program: To provide teachers with activities that foster research and inquiry skills in students.

Funding: $12,500 Eisenhower funds

Participants: 7 administrators, 1 teacher, 240 students

Program description: This project trained seven grades 4-6 teachers and the principal from the model school. The training stressed the hands-on approach to learning, making the student an active learner. The training also provided teachers with activities that fostered research and inquiry skills in students. Another prime component of this project was to transform teachers/trainees into trainers, therefore, building in-house capacity.

Major activities: Activities included training workshops, field testing of curricula, materials, kits and strategies gained from the training. Each participant gave at least three demonstration lessons in various schools throughout the district.

Program continuation or replication: Since this is a demonstration site for the Massachusetts SSI effort, this project will be continued as a component of the community's overall efforts to improve the teaching and learning of mathematics and science.

MASSACHUSETTS

Agency: local education agency

Program name: Project REACH

Grade levels: elementary school, middle/junior high school

Agency: Sutton Public Schools

Contact person: Beverly Brown

Telephone: (508) 865-6801

Purpose of program: To provide in-depth training in the integration of mathematics and science instruction for teachers in grades PK-8.

Funding: $12,440 Eisenhower funds
$12,440 total funds

Participants: 2 administrators, 31 teachers, 630 students

Program description: Emphasis was on the utilization of technology to facilitate problem solving and inquiry-based learning. A one-week summer institute focused specifically on providing inquiry-based learning in mathematics and science. A one-week curriculum design workshop was conducted to compose a written document as a culmination of the training provided by this grant and prior inservice training. During the summer of 1991, follow-up workshops helped to sustain the change begun in the previous year's training.

Major activities: Workshops including a summer institute, demonstration lessons, follow-up workshops and curriculum designed to systemically change the way mathematics and science are both conceptualized and taught. Utilization of an in-school facilitator to sustain the change process was a key to this program's success.

Program continuation or replication: Since this is a demonstration site for the Massachusetts SSI effort, this project will be continued as a component of the community's overall efforts to improve the teaching and learning of mathematics and science.

MA

MASSACHUSETTS

Agency: higher education agency

Program name: Consortium for the Improvement of Math and Science Teaching

Grade levels: elementary school, middle/junior high school, high school

Agency: North Adams State College

Contact person: Mary M. Fugua

Telephone: (413) 664-4511, ext. 285

Purpose of program: To consolidate Eisenhower funding in the region to strengthen mathematics and science teaching at all levels through the creation of a regional inservice program and resource network.

Funding:
$75,992 Eisenhower funds
$77,215 other funds
$153,137 total funds

Participants: 10 administrators, 428 teachers, 18 other school staff

Program description: Project is a partnership of twenty-one school districts in Franklin and Berkshire Counties, North Adams State College, Berkshire Community College and Greenfield Community College.

Major activities: Develop symposia, inservice workshops, consultancies to individual school districts, inventory area resources for math and science teaching, promote access to local college and community resources and publish a bimonthly newsletter.

Program continuation or replication: The project has received Eisenhower funding since the mid-1980s and has been funded for FY 1992.

MICHIGAN

Agency: local education agency

Program name: Eisenhower Local Formula Grant Program: An Example

Grade levels: elementary school, middle/junior high school, high school

Agency: Flint Community Schools

Contact person: Betty Shaw/Hugo Pinti

Telephone: (313) 760-1007

Purpose of program: To address the needs of mathematics and science education in grades K-12 through updating and enhancing teacher education in mathematics and science.

Funding: $99,007 Eisenhower funds

Participants: 2 administrators, 77 teachers

Program description: The program utilizes mathematics and science coordinators working with teachers throughout the district to address their needs through staff development.

Major activities: Included are: 1) graphing calculator: six-hour summer institute, five-hour seminars after school; 2) graduate credit for mathematics and science teachers to update their skills and knowledge; 3) attendance at professional organization conferences; 4) teacher attendance at workshops in specific areas to become leaders and trainers of other teachers.

Program continuation or replication: Each year different teachers are selected to attend the national conferences as a team. The enthusiasm from the first team was so great that they will attend as a group on their own so others can use Eisenhower money for their first conference attendance. This is an example of teachers involved in planning their professional development.

MI

MICHIGAN

Agency: local education agency

Program name: Interactive Video Curriculum Project

Grade levels: middle/junior high school

Agency: Ann Arbor Public Schools

Contact person: Joseph Riley

Telephone: (313) 994-2200

Purpose of program: To make use of interactive video technology as the medium for a revised high intensity middle school science curriculum.

Funding: $20,000 Eisenhower funds

Participants: 10 administrators, 50 teachers, 5000 students

Program description: A model middle school science curriculum based on interactive video technology is being developed. Objectives include greater relevance of the science curriculum, more emphasis on hands-on activities, integrated use of reading, writing, study skills and team training and support.

Major activities: 1) Develop prototype activities and lessons using interactive video technology; 2) develop written support materials; and 3) provide teacher inservice training.

Program continuation or replication: Project will be combined with local funds. Materials will be available for use by other schools.

MI

MICHIGAN

Agency: higher education agency

Program name: Michigan Mathematics Inservice Project (M²IP)

Grade levels: elementary school, middle/junior high school

Agency: Western Michigan University

Contact person: Ruth Ann Meyer/Robert A. Laing

Telephone: (616) 387-4525

Purpose of program: To accomplish the long range goal of improving mathematics achievement by Michigan's K-8 students.

Funding: $365,430 Eisenhower funds

Participants: 12,500 teachers

Program description: This is the third year of M²IP. The project is designed to retrain Michigan's teachers of K-8 mathematics. Curriculum modules were developed and field tested during the first two years of the project. The inservice programs are being supported by local formula grants available under the Eisenhower program and other local district monies. The grant provides the supervision of the programs, the establishment of additional inservice sites and the establishment of a corps of trainers for the teachers of mathematics.

Major activities: The training of approximately 2,500 teachers of grades K-8 mathematics will be updated during the 1991-92 school year and sites established to retrain approximately 10,000 teachers during the 1992-93 year. Trainers will also be certified to provide inservice for teachers of grades seven and eight mathematics. Evaluation of the effects of M²IP inservice programs upon the attitudes and perceptions of K-8 teachers will also be conducted.

Program continuation or replication: The project is expected to continue if Eisenhower funds are available or other sources of funding are found. Dissemination of the project will be conducted through the field directors within their respective regions during the next five years. Presentations will be made by strand leaders and project directors at each of the grade levels K-2, 3-6 and 7-8 at the Michigan Council of Teachers of Mathematics annual conference. Other presentations will be conducted under the sponsorship of the Michigan Elementary and Middle School Principals Association and at superintendents and principals association meetings in every county across the state.

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MN

MINNESOTA

Agency: local education agency

Program name: Mathematics Staff Training Project

Grade levels: elementary school, middle/junior high school, high school

Agency: Edina Public Schools

Contact person: Sandra Eliason

Telephone: (612) 920-2980

Purpose of program: To strengthen mathematics understanding throughout the grades.

Funding:
$22,731 Eisenhower funds
$29,500 other funds
$52,231 total funds

Participants: 3 administrators, 52 teachers, 2,915 students

Program description: The project's emphasis is on extensive inservice training to increase the teachers' mathematics background and to provide teachers with multiple lesson design strategies in order to respond to the NCTM standards. A four-year implementation and training design was developed to insure the successful implementation of the University of Chicago School Mathematics Project.

Major activities: The University of Chicago provided a ten-week intensive training for two district trainers. Based on this training, the trainers designed eight half-day activity grade-specific training sessions for grade 1-3 teachers to use manipulatives to promote understanding. The intermediate grade training is designed to increase teachers' substantive background in mathematics through eight inservice training sessions, plus a mathematics course offered by a local university each year for two years. Several secondary teachers have been trained at the University of Chicago and have offered two local training sessions each year for their peers.

Program continuation or replication: Ten teachers from five other school districts have been included in the grade 4-6 training so that they can replicate the inservice in their districts. Edina teachers trained to be mathematics specialists will mentor other mathematics teachers who have not been trained or are new to the district. The trained mathematics teachers will also act as consultants to K-3 teachers. Networking sessions are planned to provide opportunities for teachers to talk about mathematics and instruction.

MINNESOTA

MN

Agency: state education agency

Program name: Teacher Academy for Middle School Mathematics and Science Teachers

Grade levels: middle/junior high school

Agency: Minnesota Department of Education

Contact person: Sharon Stenglein

Telephone: (612) 296-4070

Purpose of program: To model delivery while experiencing exemplary curricular projects. As a result, teacher leaders will be prepared not only to implement new ideas in their own classrooms, but to present workshops to their colleagues.

Funding:
$70,000 Eisenhower funds
$5,000 other funds
$75,000 total funds

Participants: 10 administrators, 80 teachers

Program description: Teacher leaders were selected to participate in a one-week residential program at a professional conference site to discuss current reform issues in mathematics and science education and experience exemplary curriculum programs. Science and mathematics teachers spent time together and separately according to discipline. The experience included outstanding examples of both process and product, with teacher leaders always active participants. Activities included those appropriate for classrooms and professional workshops. Follow-up meetings will be held in conjunction with state and regional professional conferences.

Major activities: All participants were together in common sessions concerning: 1) issues in mathematics and science education: vision, obstacles and action plans; 2) Project 2061; 3) assessment in mathematics and science; 4) professional preparation of teachers in mathematics and science; 5) networking and integration issues, opportunities and activities; and 6) science and mathematics Olympic team competition with participant-designed events. Mathematics and science teachers separately considered exemplary curricular programs, with the mathematics teachers participating in a Math and the Mind's Eye workshop and the science teachers examining implementation of Science for All Americans, NSTA's SS&C Project and STS curricula.

Program continuation or replication: Individuals will arrange to give workshops to colleagues on what they have learned. This will be tracked through follow-up meetings.

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MN

MINNESOTA

Agency: higher education agency

Program name: Physical Science in the Elementary Classroom

Grade levels: elementary school

Agency: St. John's University, College of St. Benedict

Contact person: Robert Fulton

Telephone: (612) 363-3152

Purpose of project: To bring about change in the instruction of science by integrating science knowledge, current ideas about science education and effective new approaches to science teaching. Knowledge concepts and teaching approaches to be integrated include: phases of the moon, simple electrical circuits, the methods of science, properties of matter, scientific uncertainty, density and buoyancy, conceptual change teaching, concept mapping, cooperative learning, the learning cycle, and planning for curricular change.

Funding:
$29,700 Eisenhower funds
$36,484 other funds
$66,184 total funds

Participants: 19 administrators, 29 teachers

Program description: The three-week workshop provided a science teaching model for twenty-nine elementary teachers. These teachers were joined for two days of the workshop by school administrators. The purpose of the administrators' involvement is to introduce them to new pedagogical practices so they will support their teachers as they began to implement changes in their classrooms. During the academic year following the workshop, project faculty served as resource persons to assist lead teachers, their administrators, and their faculty colleagues in implementing curricular improvements in their schools and for other follow-up activities.

Major activities: The workshop was conducted in such a way that the workshop faculty modeled for the participants many of the new approaches to teaching science. These included such ideas as conceptual change teaching, cooperative learning strategies, guided discovery activities, concept mapping, and the development of problem solving and critical thinking skills. Workshop participants also had the opportunity to develop topical physical science activity modules and to share them.

Project continuation or replication: A similar science inservice higher education Eisenhower grant was awarded to St. John's University/College of St. Benedict faculty in 1991.

MISSISSIPPI

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MS

Agency: local education agency

Program name: Science Days

Grade levels: elementary school

Agency: Sale Elementary School

Contact person: Rebecca H. Taylor

Telephone: (601) 327-1482

Purpose of program: The project was designed to motivate teachers to use more hands-on science experiences to better prepare the students for the science and environment sections on the Stanford Achievement Tests.

Funding:

$800 Eisenhower funds
$50 other funds
$850 total funds

Participants: 1 administrator, 20 teachers, 270 students

Program description: The Science Days project began with the teachers reading several articles about hands-on science experiences for younger students and selecting activities from *Discovery* science booklets that matched Stanford Achievement Test objectives. Each teacher in the school was assigned two topics for which they were to produce two hands-on science stations. These stations were placed in the cafeteria for two days (Science Day) and each class (in groups of five students) was led through the stations by teachers, assistants and parents. The stations were then available to be checked out to the classrooms.

Major activities: 1) Teacher research of available materials and ideas; 2) teacher staff development on using hands-on activities; 3) teachers preparing the actual science stations; 4) students using the stations under the guidance of a teacher/assistant teacher/parent; and 5) teachers checking out the stations to use in regular classroom activities.

Program continuation or replication: The project will continue for several years because the prepared stations will be used by the classroom teachers as a part of their science instruction. Because all the materials for a given hands-on activity will be a part of the station that they check out, the teachers will use more of these activities than in the past. New units may be added as the curriculum changes.

MISSISSIPPI

MS

Agency: state education agency

Program name: Mississippi School for Mathematics and Science

Grade levels: elementary school

Agency: Mississippi Department of Education

Contact person: Katherine Bunch

Telephone: (601) 329-7687

Purpose of program: To serve as a resource for public education in Mississippi in many different ways, such as providing opportunities for teachers from other schools to attend special seminars and workshops during the summer months.

Funding:
$70,000 Eisenhower funds
$15,000 other funds
$90,000 total funds

Participants: 300-500 teachers

Program description: The overall objective is accomplished through cooperative learning experiences for teachers that include projects, hands-on activities, demonstrations, critical thinking exercises and sharing of methods and materials.

Major activities: The program encompasses seven activities (institutes and workshops) held on various dates throughout the summer. Activities include: the Woodrow Wilson Biology, Chemistry and Physics Institutes and workshops on sharing ideas in elementary mathematics and science and freshwater ecology

Program continuation or replication: Follow-up activities will occur either fall 1992 or spring 1993. A survey, rating or open-ended instrument will be used to evaluate each workshop. Mailers publicizing the workshops are sent to all Mississippi school districts to reach the underserved and underrepresented and to include districts with lower socioeconomic populations.

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MISSISSIPPI

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MS

Agency: higher education agency

Program name: Delta Mathematics Project

Grade levels: elementary school

Agency: Delta State University

Contact person: Rose Strahan

Telephone: (601) 846-4505

Purpose of program: To improve the mathematics instruction in the elementary schools of the 30 school districts who are members of the Delta Area Association for the Improvement of Schools (DAAIS) by providing intense training for teachers in both content and pedagogy.

Funding: $350,000 Eisenhower funds

Participants: 120 teachers

Program description: Delta State University (DSU), Mississippi Valley State University (MVSU) and the Delta Area Association for Improvement of Schools (DAAIS) are working together in a three-year project to improve the mathematics instruction in the elementary grades of the thirty school districts which are members of DAAIS. A total of 120 teachers of grades K-3 were paid to attend six Saturday workshops which provided intense training in both content and pedagogy. Resource centers at DSU and MVSU provide up-to-date materials and demonstrations of the use of these materials for the classroom. Teachers may check out materials to be used in their classrooms.

Major activities: The major activities for the past year were the six Saturday workshops (actually six at each location, DSU and MVSU) with each workshop lasting five hours. One group of sixty teachers attended workshops at DSU and another group of sixty attended the workshop at MVSU. A project staff member visited schools to give talks, present demonstration lessons, deliver and pick up materials. Teachers also visited the DSU center to preview and check out materials.

Program continuation or replication: Plans for the second year involve having three groups of teachers attending workshops: eighty of the current 120 from K-3 returning, eighty K-3 teachers participating for the first time and eighty grade 4-6 teachers. The two mathematics educators will maintain contact with participants through visits to the schools for one-on-one instruction and to provide demonstration lessons.

MISSOURI

▼ **Agency:** local education agency

MO **Program name:** Mathematics and Science Across the Curriculum

Grade levels: elementary school, middle/junior high school, high school

Agency: St. Louis City School District

Contact person: Lynn Beckwith, Jr.

Telephone: (314) 361-5500

Purpose of program: To improve teaching techniques and increase teachers' knowledge of mathematics and science and how they are connected to other disciplines.

Funding:
$619,098 Eisenhower funds
$344,875 other funds
$963,973 total funds

Participants: 100 administrators, 2,000 teachers, 20,000 students

Program description: This project includes various on-site workshops featuring strategies and activities which assist teachers in sharpening connections between mathematics, science and other disciplines.

Major activities: 1) Mathematics and music-quadrivium studies for mathematics and music teachers for two workshop days after school; 2) mathematics and art-computer excursion special feature software for art department chair people; 3) how to teach mathematics with *USA Today* for K-8 teachers; 4) science and the arts; and 5) reading/practical methods to develop critical thinking.

Program continuation or replication: The district plans to continue this project during the 1992-93 school year and beyond for grade levels K-12.

MISSOURI

MO

Agency: state education agency

Program name: Interface

Grade levels: elementary school, middle/junior high school, high school

Agency: Missouri State Department of Elementary and Secondary Education

Contact person: Bill Boulter

Telephone: (314) 751-9069

Purpose of program: To provid n annual conference designed for K-12 mathematics and science teachers to become updated in the latest uses of instructional, industrial and educational technology.

Funding:
$490,000 Eisenhower
$50,000 other funds
$540,000 total funds

Participants: 200 administrators, 1,800 teachers

Program description: Each year since 1986, an ever growing number of K-12 mathematics and science teachers attend this conference. In 1992 over 2,000 attended. As of now, representatives from each of Missouri's 540 school districts have been involved as participants, presenters or both. This three-day conference focuses on teachers teaching teachers their best methods and describing state, local and national efforts and agendas.

Major activities: The conference features two or three keynote speakers of national importance and about 275 concurrent sessions. These sessions focus on a whole milieu of topics and activities including biotechnology, nuclear fusion, oceanography and science and technology issues. The conference is an open-ended forum.

Program continuation or replication: Since the project has been in place for seven years and is the single most valuable program for Eisenhower funds in Missouri, there would be great protest if the conference was discontinued. Therefore, it will continue as long as Eisenhower funds are available and can be used for such purposes.

MISSOURI

▼ MO

Agency: higher education agency

Program name: Missouri Mathematics Mentoring Project

Grade levels: elementary school

Agency: University of Missouri, Columbia

Contact person: Douglas A. Grouws

Telephone: (314) 882-7888

Purpose of program: To provide high quality inservice training and follow-up assistance in mathematics for grade 4-9 teachers in central Missouri.

Funding:
$38,395 Eisenhower funds
$8,104 other funds
$46,499 total funds

Participants: 29 teachers

Program description: Project training was provided through an intensive eight-day summer institute followed by two one-day sessions in the fall. The institute provided hands-on experience with manipulative materials and group work was a regular part of each day's training. Workshop content was guided by the NCTM standards.

Major activities: The workshop was structured around a topic, such as problem solving, pre-algebra, geometry, measurement, statistics or probability. By a process matrix, which includes exploring, representing, estimating, applying and/or communicating, the inservice was conducted with training in each area. Outside class responsibilities included developing a teaching resource unit, field-testing the unit and conducting an inservice workshop in their school or a neighboring school.

Program continuation or replication: This project has received funding for 1992-93. The project is an integral part of the Missouri SSI, the University School Plus (US+) Project. Outcomes and approaches from this project will inform learning ensembles in the US+ Project. This ensemble focuses on improving inservice experiences for middle grade teachers in mathematics and science.

MONTANA

Agency: local, state and higher education agencies

Program name: Science and Issues: Using Contemporary Concerns in Secondary Science

▼ MT

Grade levels: middle/junior high school, high school

Agency: University of Minnesota

Contact person: Lee Metzgar

Telephone: (406) 243-2535

Purpose of program: To prepare state teacher leaders in teaching contemporary issues in secondary science classrooms. These leaders will provide a network to help make science instruction more relevant to students.

Funding:
$31,200 Eisenhower funds
$8,500 other funds
$39,700 total funds

Participants: 2 administrators, 18 teachers

Program description: The project was a three-week institute to provide input and instruction in the use of contemporary issues in secondary science classrooms. The science and issues course promoted integration between science and social studies instructors and prepared a state networking system for science reform.

Major activities: This institute resulted in local curriculum changes, an organization to promote curricular reform and a set of activities for teacher support.

Program continuation or replication: Reforms continue to be addressed and expansions of the project ideals continues.

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MONTANA

Agency: local and state education agency

Program name: Eagle 1

MT **Grade levels:** elementary school, middle/junior high school, high school

Agency: Helena Middle School

Contact person: Dick Sietz

Telephone: (406) 442-5720

Purpose of program: 1) To provide an opportunity for all Montana winners of the Presidential Award for Excellence in Mathematics and Science Teaching to meet and exchange needs and concerns; and 2) to form an organization that will provide statewide leadership of needed reforms in both mathematics and science.

Funding: $2,560 Eisenhower funds
$590 other funds
$3,150 total funds

Participants: 18 teachers

Program description: The Canyon Ferry Limnological Institute hosted the first meeting of K-12 mathematics and science presidential award winners. The primary focus of the meeting was to develop a statewide organization to promote needed reforms in mathematics and science and the integration of both.

Major activities: 1) Form network; 2) form a new organization to provide leadership; 3) share and exchange of needs, concerns and ideas; 4) begin the integration of mathematics and science; and 5) promote K-12 articulation.

Program continuation or replication: The new organization provides leadership in both mathematics and science education at all levels statewide in Montana.

MONTANA

Agency: higher education agency

Program name: Computer Data Acquisition and Analysis in the Secondary School Science Laboratory

MT

Grade levels: high school

Agency: Montana State University

Contact person: John Amend

Telephone: (406) 994-5379

Purpose of program: To provide open-ended interface lab experiences that promote integrated mathematics and science, improved lab safety and the practical application of mathematics and technology to science instruction.

Funding:
$38,000 Eisenhower funds
$12,000 other funds
$50,000 total funds

Participants: 5 administrators, 84 teachers, 42 students

Program description: The project provides hands-on training in the use of an interface system that provides open-ended lab situations that are student-controlled, flexible, safe and provide for excellent integration opportunities at all levels.

Major activities: 1) Provide instruction in the use of interface devices; 2) provide open-ended lab opportunities; 3) provide practical application and instruction in the scientific method; 4) provide practical uses of technology and mathematics; 5) provide integration opportunities at all levels; and 6) provide opportunities for improved lab development.

Program continuation or replication: The project has been endorsed and adopted by the Montana Science Teachers Association. Additional support is being provided by local districts across the state and corporate funding is being sought. Full labs are being established. The SSI will use the project to increase mathematics and science integration.

NEBRASKA

Agency: local education agency

Program name: Activities to Integrate Mathematics and Science (AIMS) Workshop

Grade levels: elementary school, middle/junior high school

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NE

Agency: Educational Service Unit #9

Contact person: Katie Mathews

Telephone: (402) 463-5611

Purpose of program: To train elementary teachers in the integration of AIMS materials into their curriculum.

Funding: $7,000 Eisenhower funds

Participants: 2 administrators, 44 teachers

Program description: Four lead teachers were trained in the use of AIMS materials. These teachers led two one-week workshops for local elementary teachers.

Major activities: 1) Train lead teachers, 2) plan local workshops and 3) conduct workshops

Program continuation or replication: The lead teachers will continue to provide inservice in the educational service unit area.

NEBRASKA

Agency: state education agency

Program name: Integrating Science, Mathematics and Language Arts

Grade levels: elementary school

Agency: Nebraska Department of Education

Contact person: Jim Woodland

Telephone: (402) 471-4329

Purpose of program: To develop instructional modules which integrate science, mathematics and language arts skills and processes.

Funding: $35,000 Eisenhower funds

Participants: 3 administrators, 21 teachers, 6 college faculty

Program description: Teams consisting of three master teachers from school districts and a college methods instructor developed an instructional module. The module has science, mathematics and language arts activities which complement each other and increase student mastery of skills. After development each module was piloted and revised.

Major activities: 1) Writing modules (one week), 2) piloting modules (two-eight weeks) and 3) revising modules (four weeks).

Program continuation or replication: This project will continue the school year of 1992-93. Plans are underway to expand the modules to preschool levels and to export the model to other states.

NEBRASKA

NE

Agency: higher education agency

Program name: The Nebraska Science and Math Education 2000 Conference

Grade levels: elementary school, middle/junior high school, high school, college

Agency: Chadron State College

Contact person: Monty Fickle/Lois Veath

Telephone: (308) 432-6219

Purpose of program: To reform preservice teacher preparation by facilitating communication among K-12 teachers, methods instructors and science and mathematics faculties.

Funding:
$40,000 Eisenhower funds
$5,000 other funds
$45,000 total funds

Participants: 2 administrators, 25 teachers, 35 college faculty

Program description: Nebraska science and mathematics educators met in a retreat type environment so that participants could consider issues in science and mathematics education as well as form a postsecondary association to further networking efforts.

Major activities: 1) Examine what, why and how we teach; 2) receive input from teachers, administrators and counselors; 3) develop an awareness of innovative college courses; 4) develop an action plan for improvement; and 5) develop networking.

Program continuation or replication: A follow-up conference is planned. A statewide steering committee is developing a master plan.

NEVADA

Agency: local education agency

Program name: Regional Secondary Inservice Centers

Grade levels: middle/junior high school, high school

Agency: Washoe County School District

Contact person: Jenny Salls

Telephone: (702) 851-5640, ext. 253

NV

Purpose of program: To establish regional inservice training centers for rural secondary mathematics teachers. The centers provide a central location for training without requiring that the teachers travel six to eight hours for inservicing.

Funding: $15,160 Eisenhower funds

Participants: 12 administrators, 90 teachers

Program description: Many rural school districts have one or two secondary teachers in each school; while this number is too small for a trainer of trainers inservice model these teachers still needing inservicing. A consortium of rural school districts provides funds for inservice courses presented to teachers served by the center. Three centers have been established. Funds are also used to pay release time and expenses for participants.

Major activities: The project is currently in its second year. First year activities focused on NCTM standards awareness activities for school administrators and secondary mathematics teachers. Second year activities involved Math and the Mind's Eye training for middle school mathematics teachers at two of the sites.

Program continuation or replication: Tentative plans call for training teachers in the use of technology in mathematics as well as providing additional hands-on workshops. Future plans also inlclude developing one-day "modules" of new mathematics content to be taught by university personnel on Saturdays so that participants can custom-build one to three credits of content during a year period.

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NEVADA

Agency: state education agency

Program name: Elementary Mathematics/Science Project

Grade levels: elementary school

Agency: Division of Curriculum and Instruction

Contact person: Linda Gregg

Telephone: (702) 799-8532

Purpose of program: 1) To provide staff development to assist in the reform of K-6 mathematics and science education to include NCTM curriculum and evaluation standards and multisensory process/concept science; and 2) to improve student understanding, attitudes and confidence in mathematics and science.

Funding: $243,509 Eisenhower funds

Participants: 160 administrators, 7,000 teachers, 133,000 students

Program description: Five teachers are on special assignment to provide staff development during the school day and after school. Each teacher is assigned to at least twenty-two schools. They provide staff development and demonstration lessons. They coordinate and plan as a group with curriculum specialists each area to disseminate consistent quality information. They model appropriate instructional strategies to be used with students.

Major activities: 1) Daily staff development three to four days per week; 2) after-school classes for teachers; 3) classroom demonstration lessons; and 4) video filming of lessons.

Program continuation or replication: Because of district growth and teacher/administrative mobility, the plan was designed to broadly cover the whole district and to increase depth of coverage each year. This project could easily be replicated in any other district.

NEVADA

Agency: higher education agency

Program name: Nevada Science Project (NSP)

Grade levels: elementary school, middle/junior high school, high school, college

Agency: University of Nevada, Reno

Contact person: Michael Robinson

Telephone: (702) 784-4961

Purpose of program: To promote nontraditional ways of teaching science with an emphasis on process over content and a greater use of educational technology in instruction.

Funding:
$40,000 Eisenhower funds
$60,000 other funds
$100,000 total funds

Participants: 100 teachers

Program description: The NSP is a statewide program designed to improve science instruction in classrooms by adapting and modifying some of the successful assumptions and practices of the Nevada Writing Project. It is a joint effort of elementary and secondary teachers, university faculty and the Nevada Department of Education. Key philosophical premises of the NSP include, but are not limited to, the following: 1) the best teacher of teachers is another teacher; 2) change can best be accomplished by those who work in the schools; and 3) meaningful change can only occur over time, so staff and science curriculum and instructional development must be systematic and ongoing.

Major activities: The major activities of the NSP include summer science institutes (sixty hours), a two-day fall workshop and inservice courses (fifteen hours) in the field. The summer science institutes are aimed at increasing content knowledge on STS topics such as water, energy, air quality and mineral resources. Teachers design science activities using the new content that science experts present. The activities are given to all teachers who attend inservice programs. So far, three units have been produced with back-up materials.

Program continuation or replication: The project is entering its third year. It has statewide support of the two largest school districts and the rural alliance. It is hoped that it will be ongoing and eventually financed by the two largest school districts and the rural alliance. It can fulfill the role of a professional development center in science for the fifteen rural school districts. The units will continue to be produced and updated as long as STS issues are present.

NEW HAMPSHIRE

Agency: local education agency

Program name: Project Graph Again

Grade levels: high school

Agency: Profile School District

Contact person: Laurie Boswell/Cecile Carlton/Arthur Jackson

Telephone: (603) 823-7411

NH

Purpose of program: To demonstrate specific topics/concepts from the mathematics (algebra through pre-calculus) and the physics curricula and how these topics/concepts could be taught using a graphing calculator.

Funding: $8,272 Eisenhower funds

Participants: 60 teachers

Program description: Project Graph Again used three consecutive days in the spring of 1990 to bring Dr. Bert Waits or Dr. Franklin Demana from the Ohio State University to New Hampshire to run full-day workshops at three different sites.

Major activities: The same workshop was repeated each day at Profile High School, Concord High School and Nashua High School.

Program continuation or replication: The project activities were replicated in a number of locations. Additionally, summer 1991 week-long programs used participants and key teachers from the project as instructors at summer programs.

NEW HAMPSHIRE

Agency: local education agency

Program name: Cooperative Physical Science Training Project

Grade levels: elementary school, middle/junior high school

Agency: Hudson School District

Contact person: Peter Dolloff

Telephone: (603) 883-7765

NH

Purpose of program: To improve the teaching of basic physical science concepts in the elementary and middle school grades by providing training in the use of the nationally developed Operation Physics materials.

Funding: $10,710 Eisenhower funds

Participants: 50 teachers

Program description: During the spring of 1991, a series of three-hour workshops were offered to fifty elementary school teachers representing fourteen school districts. Workshops merged content and practice topics that focused on heat, measurement, forces, motion, matter and change.

Major activities: Hands-on activities requiring only inexpensive and readily available materials were presented. The focus of the staff development was on the ways to infuse these activities into any science curriculum.

Program continuation or replication: This project, using different topics, was replicated in the spring of 1992.

NEW HAMPSHIRE

Agency: higher education agency

Program name: Pursuing Interrelationships: Mathematics and Science (PI:MASS)

Grade levels: elementary school

Agency: Plymouth State College

Contact person: Eldwin Wixson

▼ **Telephone:** (603) 535-2505

NH

Purpose of program: To improve the quality and quantity of mathematics and science instruction in the elementary schools through the efforts of a cadre of newly trained leaders adept in pursuing interrelationships between mathematics and science.

Funding: $46,413 Eisenhower funds

Participants: 20 teachers

Program description: The PI:MASS Project has three basic components: 1) Phase I: formation of an advisory committee, evaluation of the elementary school mathematics and science staff development needs and selection of participants; 2) Phase II: six weeks of summer institute classes; and 3) Phase III: follow-up consultations providing support for the participants' efforts to improve mathematics and science learning in their schools.

Major activities: Activities included planning and conducting the six-week institute and the follow-up workshop. The summer program focused on assisting teachers: 1) to update their mathematics and science content background; 2) to observe and critique new teaching/learning strategies; and 3) to work in pairs and small groups to design curriculum modules.

Program continuation or replication: The project has not been replicated. However, the model will be used to structure anticipated summer programs for New Hampshire's SSI Project if funded by the NSF.

NEW JERSEY

Agency: state education agency

Program name: Environmental Sciences Instruction Improvement

Grade levels: elementary school, middle/junior high school, high school

Agency: New Jersey Marine Sciences Consortium and the Raritan River Education Consortium (RREC)

Contact person: Joan Sheridan

Telephone: (908) 872-1300

Purpose of program: To provide professional development activities for elementary teachers and follow-up development for secondary teachers who had participated in the 1991 workshop. The program will emphasize strategies for generating interest in the consortium materials among other teachers in the district.

Funding: $119, 997 Eisenhower funds

Participants: 13 administrators, 150 teachers

Program description: The development of elementary and secondary curriculum materials through committees which meet on a monthly basis. The curriculum guide includes educational activities in the areas of fresh water ecology, salt water ecology, geology and history/social issues related to the Raritan River.

Major activities: Both elementary and secondary teachers received hands-on exposure to the Raritan River through teacher training workshops, boat and field trips. Elementary participants were taught principles of aquatic sampling and shown how to sample for aquatic organisms and water quality data. They were also involved in history and social issues.

Program continuation or replication: The RREC is planning to develop and implement a comprehensive program for monitoring various locations along the Raritan River and Estuary. The program is intended to allow participating teachers and their students to collect general water quality data and compile information on biotic resources within the system.

NEW JERSEY

Agency: higher education agency

Program name: Enhanced Mathematics Instruction Through Computer Integration

Grade levels: middle/junior high schools, high schools

Agency: Stevens Institute of Technology

Contact person: Angelina S. Corbet

Telephone: (201) 216-5037

▼
NJ

Purpose of program: To enhance mathematics education by creating model programs focusing on teacher-directed use in mathematics instruction. This project stresses the central role of a teacher's judgement and style as computer technology is incorporated into classroom practice.

Funding: $345,000 Eisenhower funds
$1,000,000 other funds
$1,345,000 total funds

Participants: 70 administrators, 400 teachers, 30,000 students

Program description: Stevens Institute of Technology, in cooperation with New Jersey Network, initiated inservice teacher training videoconferences. These have been transmitted throughout the U.S. by the Satellite Educational Resources Consortium. Two videonconferences have been held. Stevens has been training faculty from other colleges and universities to provide hands-on support and workshops for teachers viewing these videoconferences on computer interaction in mathematics education.

Major activities: Stevens has succeeded in creating demonstration sites in five New Jersey school systems where the impact and efficacy of the project has been evaluated by researchers from the Educational Testing Service, Bank Street College of Education, the sociology department at Princeton University, as well as by researchers from Stevens. Research results indicate that the effective use of technology improves student proficiency levels in mathematics, enhances teacher effectiveness and professionalism and improves teacher understanding of mathematics.

Program continuation or replication: Stevens has recently received a grant of $175,000 from the Charles A. Dana Foundation for a 1993-94 videoconference series emphasizing computer use in pre-algebra, algebra and geometry classrooms.

NEW MEXICO

Agency: local education agency

Program name: Science Enrichment

Grade levels: elementary school, middle/junior high school, high school

Agency: Santa Rosa Consolidated Schools #8

Contact person: Ken Livingston

Telephone: (505) 472-3100

Purpose of program: To train teachers and instructional assistants in science and mathematics hands-on activities.

Funding:

$6,430 Eisenhower funds
$26,500 other funds
$32,930 total funds

▼
NM

Participants: 4 administrators, 34 teachers, 827 students

Program description: During the past year, through a U.S. Department of Energy grant, the district was able to purchase over thirty hands-on science kits for elementary and middle school classes. Inservice training for the teachers was provided on-site and at other locations within the state through the Eisenhower funds. In addition to these training sessions, an on-site science consultant provided ongoing inservice during the school year.

Major activities: Teachers also attended science advisors workshops at Sandia National Laboratory, AIMS workshops, the New Mexico State Department of Education Leadership Institute and on-site training activities.

Program continuation or replication: Teachers will continue to receive training in the use of the science and mathematics materials kits. As a result of this project, the district has been successful in seeking grants from other agencies. We plan to continue the staff development provided through the Eisenhower funds.

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NEW MEXICO

Agency: state education agency

Program name: Leadership Institute for Mathematics and Science Teachers

Grade levels: elementary school, middle/junior high school

Agency: New Mexico State Department of Education

Contact person: Claire Fenton

Telephone: (505) 827-6677

Purpose of program: To enhance the abilities of K-8 teachers to provide exciting hands-on mathematics and science instruction. The goal is to: 1) increase both content and process knowledge of participants; and 2) to provide them with techniques which increase the participation of underrepresented groups in mathematics and science.

▼

NM

Funding:
$12,000 Eisenhower funds
$4,000 other funds
$16,000 total funds

Participants: 43 teachers

Program description: Participants attended two four-hour mathematics and two four-hour science workshops, each taught by different presenters. One of the science workshops was taught by both science and art teachers and focused on activities integrating science and art. The other science workshop focused on endangered species. One of the mathematics workshops focused on measurement activities and the other on patterns and calculators. Both mathematics workshops referenced the NCTM standards. All participants received technical support and the supplies needed to replicate this training in their own schools for other teachers. Local administrators agreed to provide assistance to the trained teachers at their local schools.

Major activities: Major activities included hands-on experiences, a cooperative learning focus and participant sharing of ideas.

Program continuation or replication: There is always a waiting list for participation in this project. It will be continued next summer and probably add a section for high school teachers.

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NEW MEXICO

Agency: higher education agency

Program name: Master of Science Teaching Program at New Mexico Tech

Grade levels: middle/junior high school, high school

Agency: New Mexico Tech

Contact person: Donald K. Brandould

Telephone: (505) 835-5319

Purpose of program: To improve science and mathematics instruction in New Mexico pre-college schools, particularly rural and small community school systems where science and mathematics instruction is often weakest.

Funding:
$58,488 Eisenhower funds
$28,600 other funds
$87,088 total funds

Participants: 120 teachers

Program description: The program consists of a series of two-week intensive subject matter courses, especially designed to provide inservice teachers with up-to-date information in science, mathematics, computer science and engineering.

Major activities: New Mexico Tech faculty offer courses in biology, chemistry, physics, geoscience, computer science, mathematics, mineral engineering and technical writing. The classes involve lectures, discussions and workshops with emphasis on field and laboratory experiences.

Program continuation or replication: Since this program began in 1969, 127 master of science teaching degrees have been awarded, forty of which were awarded after the Eisenhower funds were provided. This program is an important resource to the state and will continue.

NEW YORK

Agency: local education agency

Program name: Eisenhower Mathematics and Science Project

Grade levels: elementary school, middle/junior high school, high school

Agency: Red Creek Central School District

Contact person: David B. Borst

Telephone: (315) 754-8154

Purpose of program: To introduce laser technology especially holography, into class curriculum studies involving art, science, technology, gifted and talented mathematics and English.

Funding:
$4,132 Eisenhower funds
$2,307 other funds
$6,439 total funds

▼
NY

Participants: 1 administrator, 6 teachers, 80 students

Program description: Laser technology was used to produce holograms and to study properties and characteristics of light. Laser physics, optical principles, light waves and the properties of color are included in the curriculum. The mathematical applications include aspects of plane geometry, trigonometry and practical applications.

Major activities: Activities include: 1) out-of-district training and in-district training in technology for teachers which included a presentation by Thomas Altman, coauthor of *The Holography Primer;* and 2) student class activities.

Program continuation or replication: The district plans to develop a three-year plan to continue implementation and maintenance of project goals and objectives across curriculum areas.

NEW YORK

Agency: state education agency

Program name: Improving Elementary Science Instruction

Grade levels: elementary school

Agency: Genesee Community College

Contact person: Larene Hoelcle/John Will

Telephone: (716) 343-0055/(716) 589-9235

Purpose of program: To improve science teaching skills of public and nonpublic elementary teachers.

Funding: $37,300 Eisenhower funds

Participants: 42 teachers

Program description: The summer institute was designed to address issues in problem solving, a whole language approach to science, materials management in the classroom, student management for science activities and creating a learning environment for problem solving. These were best taught through hands-on science activities appropriate for each level of instruction.

Major activities: The teachers from nineteen local schools attended a thirty-hour summer institute. There were two follow-up meetings with guest speakers who addressed career opportunities for women in science and handicap awareness in science instruction. Four newsletters distributed to all science teachers in the region provided additional information, ideas and thirty-four classroom activities. Follow-up activities included observing teachers conducting workshops for colleagues in their home schools.

Program continuation or replication: The project is replicated by having the teachers conduct similar workshops for their colleagues which has a multiplier effect, not only on the number of teachers, but also the number of students impacted by this program.

NEW YORK

Agency: higher education agency

Program name: More Math for More Females

Grade levels: elementary school, middle/junior high, high school

Agency: State University of New York at Binghamton

Contact person: Edward Burns/Kathyrn Fisher

Telephone: (607) 777-6044

Purpose of program: To encourage female students to continue studying mathematics throughout high school.

Funding:
$45,000 Eisenhower funds
$20,600 other funds
$65,600 total funds

NY

Participants: 4 administrators, 46 teachers, 980 students

Program description: The project offered a graduate course, Improving Gender Equity in Mathematics, which involved developing an understanding of the current research in the areas of gender equity, mathematics anxiety and practices in the teaching of mathematics such as problem solving, spatial visualization, cooperative learning and the use of manipulatives. The project also organized an annual career conference entitled Females + Math = Exciting Careers.

Major activities: Professional women from the area, including many from nontraditional areas such as engineering, made presentations and served as role models for grade 4-12 female students. Each student was required to be accompanied by an adult. In addition, the project provided inservice training workshops for the elementary and junior high school teachers of the students who attended the conference.

Program continuation or replication: Until expectations and opportunities for female students become more equitable, the need for activities such as the graduate course and career conference will continue to exist. Dissemination of the project's activities continues within New York state and is being shared at NCTM meetings. Collaboration with another Eisenhower project in New York state has resulted in a teleconference program that will provide live and videotaped training in the Family Math program established by EQUALS at the University of California at Berkeley. Videotapes of this program will be available for distribution throughout the United States, thus providing a national audience for contact with this project.

NORTH CAROLINA

Agency: local education agency

Program name: Mathematics/Science Miniconference

Grade levels: elementary school, middle/junior high school, high school

Agency: Craven County Schools

Contact person: Annette Edwards Brown

Telephone: (919) 638-2133

Purpose of program: To provide sessions in mathematics and science for all elementary and interested middle and secondary teachers in a conference setting. All presenters were colleagues of participants, which enhanced their credibility. The sessions presented ideas, materials and techniques that really work.

Funding: $24,646 Eisenhower funds

Participants: 788 teachers

Program description: This two-day conference consisted of sessions presented by teachers in the school system to their colleagues. These in-house presentations lent credibility to ideas and techniques that really work. Each teacher attended a half-day session. Substitutes were provided (except for nonpublic school teachers) who attended.

▼ NC

Major activities: Sessions in conference format designed for small group participation.

Program continuation or replication: This project has been growing over the three years of existence. Increased numbers of teachers are attending as interest grows. Middle school and high school level teachers are becoming more interested in attending.

NORTH CAROLINA

Agency: state education agency

Program name: Experimental Science Program Instructional Materials and Staff Development for the Standard Course of Study.

Grade levels: elementary school

Agency: North Carolina Department of Public Instruction

Contact person: William Spooner

Telephone: (919) 733-3694

Purpose of program: To provide activities, hands-on materials and staff development to K-3 teachers in North Carolina in the area of science.

Funding: $70,000 Eisenhower funds

Participants: 15,000 teachers

▼ NC

Program description: Since the implementation of the *North Carolina Basic Education Plan and Standard Course of Study and Teacher Handbook*, science educators have asked for supporting activities for these documents. The science section of the department of public instruction has produced a series of K-3 activity booklets which are 100% correlated to the North Carolina Standard Course of Study. Seventeen experiential kits were developed to be used for staff development with the project. Eight kits will be placed in regional education centers and eight kits will be placed in one pilot school per region. One kit is to remain with the Raleigh-based staff.

Major activities: Construction of science activity booklets and kits and corresponding staff development.

Program continuation or replication: This is a three-year project.

NORTH CAROLINA

Agency: higher education agency

Program name: Lead Science Teacher Program for the Elementary and Middle Grades

Grade levels: elementary school, middle/junior high school

Agency: Center for Research in Mathematics/Science Education

Contact person: Glenda Carter

Telephone: (919) 515-6920

Purpose of program: 1) To update teachers' knowledge about methods, materials, facilities and resources for developing a hands-on science program in their schools; 2) to provide teachers with the skills necessary to establish leadership roles in their schools; and 3) to assist teachers with conducting science workshops in their schools that meet the needs of their colleagues.

Funding:
$20,000 Eisenhower funds
$17,100 other funds
$37,100 total funds

Participants: 18 teachers

Program description: Two teachers from each middle and elementary school in Chatham County (eighteen teachers total) were nominated by the county supervisors and superintendents. All teachers accepted the nomination to become lead science teachers. The initial meeting was spent assessing their professional development needs. School year and summer workshops were planned in the areas the teachers felt deficient.

Major activities: During the winter and spring prior to the summer institutes, three two-day workshops were conducted. Topics covered included astronomy, telecommunications, earth and environmental science and Great Explorations in Mathematics and Science. The summer institute was designed to update teachers in methods, materials, facilities and resources for developing a hands-on science program within their schools. Emphasis was placed on leadership training activities, earth science, physical science and biological science. The institute utilized activities-based materials such as Outdoor Biological Instructional Activities, TOPS and AIMS.

Program continuation or replication: Two follow-up weekends on teacher leadership took place in the fall.

NORTH DAKOTA

Agency: local education agency

Program name: A Science Specialist/Teacher for the Bismarck Public Schools

Grade levels: elementary school

Agency: Bismarck Public Schools

Contact person: Sharon Johnson

Telephone: (701) 221-3738

Purpose of program: To put a junior high school science teacher/mentor into one or two elementary schools on a half-day basis to help elementary teachers plan and teach science lessons. The person will also teach demonstration lessons for the elementary teachers.

Funding: $15,000 Eisenhower funds

Participants: 3 administrators, 30 teachers

Program description: One junior high school teacher was selected from the system to assist in increasing the number and quality of science lessons in the elementary classrooms.

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ND

Major activities: The first year of the project will focus on one or two elementary schools with the idea that perhaps some of the teachers from these schools can be utilized in future years in other schools.

Program continuation or replication: The plan is to extend this project through all the Bismarck schools in the next two or three years (seventeen schools). Eisenhower funds will be used to hire a half-time person for a year or two.

NORTH DAKOTA

Agency: state education agency

Program name: Bus trip to regional NCTM Convention

Grade levels: elementary school, middle/junior high school, high school

Agency: North Dakota Council of Teachers of Mathematics,
Dickinson State University

Contact person: Don Vick

Telephone: (701) 227-2326

Purpose of program: State education agency monies provided partial support to run a bus from North Dakota to the regional NCTM convention in Des Moines, Iowa.

Funding:
$4,000 Eisenhower funds
$3,000 other funds
$7,000 total funds

Participants: 44 teachers, 800 students

Program description: The North Dakota Council of Teachers of Mathematics organized a bus trip for forty-four North Dakota teachers. The package included travel and motel room expenses at the convention. The teachers were responsible for their own conference registration and about $55 (most were able to get their schools to use Eisenhower monies to cover these costs).

▼
ND

Major activities: In addition to the obvious professional growth obtained from attending a regional convention, the teachers felt the networking on the travel bus was invaluable. The program included evaluation which produced positive reactions concerning the great value of the trip.

Program continuation or replication: This has been done in past years and will continue. Teachers get inspired and look for other ways to improve.

NORTH DAKOTA

Agency: higher education agency

Program name: Summer Institute for Secondary Mathematics Teachers (7-12)

Grade levels: middle/junior high school, high school

Agency: Minot State University

Contact person: James Babb

Telephone: (701) 857-3072

Purpose of program: To produce additional certified mathematics teachers. Since 1986, Minot State University has conducted eight-week summer institutes. Twenty-one mathematics teachers have been graduated.

Funding: $20,000 Eisenhower funds

Participants: 20-30 teachers, 400 students

Program description: Since 1986 the program has conducted a series of summer courses which involve mathematics content and methods.

▼
ND

Major activities: The courses are taught using the latest available technology and methods recommended in the NCTM standards.

Program continuation or replication: The program will be ongoing as long as funding is available and there is an adequate number of teachers willing to take a summer or more off to participate.

OHIO

Agency: state education agency

Program name: Ohio Model For Excellence In Mathematics Project

Grade levels: elementary school, middle/junior high school, high school

Agency: Ohio Department of Education

Contact person: Steven Meiring, Margaret Kosten, Anne Mikesell

Telephone: (614) 466-2761

Purpose of program: To improve student achievement in mathematics through a systematic staff development program designed to facilitate the implementation of the instructional and assessment components of Ohio's Model Competency-Based Mathematics Program.

Funding: $210,000 Eisenhower funds

Participants: 600 teachers

Program description: The Ohio Department of Education and Ohio Council of Teachers of Mathematics (OCTM) have identified outstanding mathematics educators (elementary through higher education) to serve as leaders of regional staff development teams consisting of additional OCTM members. These teams developed and conducted a series of regional workshops and other support activities to train leadership teams in every school district to facilitate the implementation of the competency-based mathematics program in their school districts.

Major activities: 1) Stage one: awareness workshops for school district administrators were conducted by Ohio Department of Education staff (fall 1991); 2) stage two: series of three full-day regional workshops and follow-up evening meetings to train leadership teams (beginning spring 1992 and continuing through spring 1993); 3) stage three: networking activities to extend ideas from district to district and region to region; and 4) stage four: outreach activities to facilitate school-based teams in providing staff development and support to all teachers of mathematics.

Program continuation or replication: Plans for conducting the second and third full-day regional workshops and follow-up meetings are being finalized. Networking and outreach activities are also being developed. Project activities are designed to support Ohio's Regional Teacher Training Centers and SSI effort, Project Discovery.

OHIO

Agency: higher education agency

Program name: K-8 Science Activities Workshop for Rural Schools of Seneca County

Grade levels: elementary school, middle school/junior high school

Agency: Heidelberg College

Contact person: Paul Adams

Telephone: (419) 448-2000

Purpose of program: To improve science instruction within the depressed rural area surrounding Heidelberg College.

Funding:
$38,363 Eisenhower funds
$17,399 other funds
$55,762 total funds

Participants: 24 teachers

Program description: The project consisted of two parts: 1) a two-week summer workshop and five three-hour meetings during the following year. The summer workshop was designed to instruct the teachers on science content, inquiry-based classroom management and methods of working with the supplied activity kits.

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OH

Major activities: Workshop component: One to two hours was spent updating content knowledge with time remaining used in carrying out the developed activities. Topic addressed were: forces and motion, energy, machines, electricity, chemistry in the kitchen, chemistry for the consumer, chemistry for the detective, astronomy, geology, plants, nature awareness, ecology and sound. Additional sessions included the state of science education, use of high-tech media, science safety, how to run a workshop, tips on dissemination and teacher demonstrations. Five follow-up sessions were held. One hour of each session was spent reporting on current dissemination activities and discussing hands-on science.

Program continuation or replication: The participants devised their own dissemination programs. Some of the activities that were developed are now being used for pre-service teacher education at Heidelberg College. Tentatively, a hands-on science course for elementary teachers will be offered this summer. Dr. Adams will be instructing the course using many of the materials from the project.

OHIO

Agency: higher education agency

Program name: Science is Fun!

Grade levels: elementary school, middle/junior high school, high school

Agency: Miami University-Middletown Campus

Contact person: Arlyne M. Sarquis

Telephone: (513) 424-4444

Purpose of program: To provide hands-on, inquiry-based science education for inservice teachers and students in grades K-12.

Funding:
$65,685 Eisenhower funds
$88,612 other funds
$154,297 total funds

Participants: 51 teachers, 3,800 students

Program description: The project is designed to impact both teachers and students. The teacher portion has a two-fold emphasis. Inservice science teachers are able to develop new hands-on activities and learn how to operate science camps and carnivals. Elementary teachers increase their knowledge of science content, especially in using a hands-on, inquiry-based method of teaching science. The project is also designed to motivate and challenge students in the sciences by using a hands-on, inquiry-based approach to learning.

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OH

Major activities: Teacher activities include a facilitators workshop and an elementary school teacher workshop. The facilitators program allows three teachers from the same district, who teach at different grade levels, to learn new techniques and science camp/carnival administration. The elementary teacher workshop helps inservice teachers with little or no science background in both content and activity-based lessons. Student activities include summer science camps and science carnivals for elementary and middle school students and Saturday science sessions for high school students.

Program continuation or replication: Teachers in the facilitator program conduct at least one inservice session for teachers in their district, along with a science carnival or camp for elementary and middle school students in their district. They also make presentations to various science education meetings.

OKLAHOMA

Agency: local education agency

Program name: Hands on Experience in Holography

Grade levels: middle/junior high school, high school

Agency: Grandfield High School I-249

Contact person: Chuck Storm

Telephone: (405) 479-5237

Purpose of program: To introduce technology into the classroom and to motivate students in different areas of the science curriculum. The use of computers and a laser beam are the methods which will be used to achieve this purpose.

Funding: $1,210 Eisenhower funds

Participants: 1 administrator, 1 teacher, 146 students

Program description: A laser beam was used to introduce holograms into the physics and physical science curricula. The laser was also used in the study of light and optics. Computer software was used to guide and enhance student learning of chemistry, physics and physical science.

Major activities: As the major activity of the project students made holograms. Computer software was used to reinforce lectures and tutor students.

Program continuation or replication: At the present time, we plan to continue with the program if funding is available. We will purchase additional software and additional materials to produce more holograms.

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OK

OKLAHOMA

Agency: state education agency

Program name: Science Partnerships Workshops

Grade levels: elementary school, middle/junior high school, high school

Agency: Oklahoma Department of Education

Contact person: Nancy S. Brock

Telephone: (405) 521-3361

Purpose of program: To show how to implement grants and partnership resources for classroom projects which are sometimes beyond the realm of current budgets.

Funding: $34,000 Eisenhower funds

Participants: 100 administrators, 1,000 teachers

Program description: Learning how to form partnerships in communities and write for small grants for school resources. Participants will be supplied books and materials to share with co-workers. K-12 teachers and administrators will be included. They will share hands-on labs which have been effective in teacher classrooms. A compiled booklet of these labs will be shared.

Major activities: Form partnerships, write grants, share ideas and conduct field trips.

Program continuation or replication: A booklet will be printed of all hands-on information shared by teachers and sent to participants. A follow-up workshop will evaluate the number of partnerships that were effective and if problems could be avoided.

▼
OK

OKLAHOMA

Agency: higher education agency

Program name: Natural Mathematics

Grade levels: elementary school

Agency: East Central University

Contact person: Nedra C. Sears

Telephone: (405) 332-8000, ext. 344

Purpose of program: To provide the parents of Seminole and black Headstart and kindergarten children with early mathematics activities to use at home to develop the mathematics conceptual base of children entering public schools.

Funding: $42,227 Eisenhower funds

Participants: 3 administrators, 38 teachers, 122 students

Program description: One hundred and twenty-two children from Boley Headstart and Kindergarten, Justice Elementary Kindergarten and Seminole Nation Headstart are participating (spring/summer) in a project to develop early mathematics concepts through play, stories and game activities with their own families. Special home activity packets which specifically focus on the skill areas are being developed. The high cost of books which are appropriate for this project has prompted the developers to write small books which focus on mathematics concepts and use names of various participants as the character names in the stories. Training has been provided for parents and a mathematics fair was held to show off the mathematics skills of the children.

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OK

Major activities: 1) Development of materials which are culturally and developmentally appropriate for children from three to six years of age in minority populations; 2) printing and distributing of materials on a monthly basis at the school sites (packets are directly mailed to children during summer); 3) training for parents and teachers; 4) mathematics fair; 5) site visits by evaluation teams; and 6) using a portable computer lab to enable children and their families to use the computer and talking mathematics software.

Program continuation or replication: Interest among other tribes and further research indicates that culturally relevant materials for various groups should be developed. Continuation of the program will be provided by: 1) reapplication for funding follow-up from the Eisenhower monies; and 2) a proposal to the Department of Education to extend the project to the Chickasaw and Choctaw Nations of Oklahoma.

OREGON

Agency: local education agency

Program name: Douglas County Math/Science Consortium

Grade levels: science: elementary school, middle/junior high school
mathematics: high school

Agency: Douglas Education Service District

Contact person: Bonnie Leonard

Telephone: (503) 440-4756

Purpose of program: To familiarize teachers with math manipulatives and alternate teaching methods. To build on teacher networking and help teachers better understand problem solving, geometry, statistics and probability. Increase teacher understanding and interest in teaching concepts and processes as set forth in the Oregon Common Curriculum Goals document.

Funding: $50,226 Eisenhower funds
$25,000 other funds
$75,226 total funds

Participants: 196 teachers, 7,663 students

Program description: Four college credit classes and six awareness workshops offered to all participants. Box It and Bag It (primary level); Teaching for Math Understanding (intermediate level); Math and the Mind's Eye (grades 5-12); and Science Concepts and Leadership Skills Program I (K-8).

Major activities: 1) Instruction based on coursework with activities; 2) science instruction: twenty-four teachers attended the state science conference to enhance their role as leaders in designing additional science awareness activities; 3) teachers developed skill and understanding in networking.

▼
OR

Program continuation or replication: Teachers of both mathematics and science become advocates and building level leaders. The science consortium continues to offer on-site inservice through regional science awareness workshops. Both math and science inservice activity will continue in subsequent staff development activity supported by Eisenhower funding.

OREGON

Agency: local education agency

Program name: Clatsop County Science Consortium

Grade levels: elementary school, middle/junior high school

Agency: Clatsop Educational Service District

Contact person: Richard Laughlin

Telephone: (503) 325-2862

Purpose of program: To implement concept/process based curriculum at the elementary level, using the Oregon Common Curriculum Goals for Science as the organized teachers develop skills in delivering an inquiry-based, hands-on project instructional process. The high school (7-12) level dealt with science as problem solving using STS and values goals.

Funding:
$12,617 Eisenhower funds
$13,000 other funds
$25,617 total funds

Participants: 118 teachers, 1,740 students

Major activities: Elementary: Provide staff development focusing on developing and testing activities designed to meet the state science framework goals related to STS and other value issues. Secondary: Develop comparative projects for middle school staff at the county level. Develop a model for using science as problem solving as the organizer for 7-12 science.

Program continuation or replication: Elementary: A modeling workshop was conducted to demonstrate using concept/process-level science curriculum as a problem solving instructional model. Secondary: The grade 7-12 staff conducted projects designed by their project team, conducted the project activities, enlisted the project with the aid of their fellow staffers.

▼
OR

PENNSYLVANIA

Agency: local education agency

Program name: Commonwealth Elementary Science Teaching Alliance (CESTA)

Grade levels: elementary school

Agency: Franklin Institute

Contact person: Wayne Ransom

Telephone: (215) 448-1192

Purpose of program: To train leadership teams to improve elementary science in Pennsylvania.

Funding:
$130,000 Eisenhower funds
$864,000 other funds
$994,000 total funds

Participants: 250 administrators, 2,200 teachers, 85,000 students

Program description: Leadership teams of two teachers and one administrator from each school district have been trained. These teams have been delivering workshops to other teachers within their region of the state. The workshops vary in length from one day to two weeks. School districts support teacher involvement in these workshops. Teams function in their region to advance science activities by promoting a variety of activities. Teams train teachers in hands-on science and integrative activities and establish regional centers for science education.

Major activities: Summer leadership institutes were held for eighteen teams of three from around the state. Routine support was provided by the newsletter and visits by the coordinator to assist in carrying out local plans of action. Teams met at the state science convention for two additional days of training and planning. Local teams work together to stimulate regional activities that promote science.

Program continuation or replication: Project plans include extending it to middle school life science with funding from Howard Hughes Foundation. The CESTA model has been used by many colleges and universities to provide enhanced mathematics and science programs in the state. A national invitational conference is planned to share this project and other successful projects to a select national audience. A regional resource center application is pending. This proposal would extend the impact of the regional teams within their region of the state.

PENNSYLVANIA

Agency: state education agency

Program name: Thinking Like a Scientist

Grade levels: elementary school

Agency: Pennsylvania State University

Contact person: Sylvia Stein

Telephone: (814) 863-7688

Purpose of program: To provide a three-program series called Thinking Like a Scientist to about 8,000 elementary aged children in rural central Pennsylvania. The programs teach science processes through games and multimedia presentations using NASA aerospace educational materials.

Funding: $19,783 Eisenhower funds

Participants: 128 teachers, 8,000 students

Program description: Graduate science students were trained to deliver three aerospace science programs to upper elementary students. These presentations, Getting There, Living in Space and Looking Around were scheduled to fit in with existing science curricula. The presenters were carefully selected by the university and coached in their presentation skills. Presenters went as far as fifty miles from campus to deliver the lessons.

Major activities: The impact of the program was assessed by having students draw pictures of a scientist before they experienced the visit and then again after the visit. The lessons, multimedia presentations and assessment strategy are clearly developed and available in a notebook.

Program continuation or replication: The entire activity is easily replicated at any university with a desire to serve the local schools.

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PA

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PENNSYLVANIA

Agency: higher education agency

Program name: Operation Physics

Grade levels: K-12

Agency: Drexel University

Contact person: Len Feingold/Chuck Beehler

Telephone: (215) 895-2740

Purpose of program: 1) To train elementary, middle and secondary science teams in the use of Operation Physics materials and activities; and 2) to support these teams for regional training in the Philadelphia area.

Funding: $202,500 Eisenhower funds
$557,500 other funds
$760,000 total funds

Participants: 69 teachers, 5,800 students

Program description: The project brought the teams from the Philadelphia area to Drexel University for intensive training with the Operation Physics material. The staff used national Operation Physics materials and showed teachers how to make physics exciting, relevant and hands-on. The staff included university professors and practicing secondary physics teachers, half of whom were female.

Major activities: Each team trained other teachers at workshops in the home school district. There are follow-up evening seminars at Drexel University. There is active collaboration of Drexel physics professors, who visit the schools and the teams.

Program continuation or replication: The plan includes the expansion of southeast Pennsylvania Operation Physics through 1994. This will include the extension of the trained teams to other schools in this highly populated region of the state and provide some retraining for the original groups.

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PA

PUERTO RICO

Agency: territory education agency

Program name: Institute of Continued Education for Science Teachers

Grade levels: elementary school, middle/junior high school, high school

Agency: Department of Education

Contact person: Julio E. Lopez-Ferrao

Telephone: (809) 753-9255

Purpose of program: To provide staff development to science teachers during the academic year by improving their skills and strategies necessary to teach effectively.

Funding: $608,134 Eisenhower funds

Participants: 1,548 teachers

Program description: A training program with emphasis on the understanding of basic science concepts and skills to improve the teaching of science at the elementary and secondary levels.

Major activities: On-site demonstrations offered in the participants' schools by college professors to show teaching strategies and concept development.

Program continuation or replication: There are 240 secondary science teachers and 500 elementary teachers participating in the institute for the 1991-92 school year. The institute will be extended to 350 more during the 1992-93 school year.

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PR

PUERTO RICO

Agency: territory education agency

Program name: Scientific Research Academy for Teachers and Students

Grade levels: high school

Agency: Department of Education

Contact person: Julio E. Lopez-Ferrao

Telephone: (809) 753-9255

Purpose of program: To establish a research apprenticeship program that will provide a practicum for teachers on the supervision and evaluation of research projects, intensify their research skills, train them in research processes and provide students with a high quality research experience.

Funding: $1,352,710 Eisenhower funds

Participants: 160 teachers, 205 students

Program description: A simultaneous training program of both teachers and students to enable them to work cooperatively in science research in their school. The teacher's role in a research team is emphasized.

Major activities: Workshops on scientific methods and science processes, writing and correction of proposals and abstracts, teachers practicum, audiovisual techniques for presentation of research projects, short courses in statistics, photography mounting techniques, bibliography writing and credits and use of vertebrates in investigation.

Program continuation or replication: There are five scientific research academies for teachers and students during the 1991-92 school year. An extension of one more is expected for the 1992-93 school year.

PUERTO RICO

Agency: territory education agency

Program name: Demonstration Centers

Grade levels: elementary school, middle/junior high school, high school

Agency: Department of Education

Contact person: Julio E. Lopez-Ferrao

Telephone: (809) 753-9255

Purpose of program: To provide inservice training and the retraining of science teachers at the local level.

Funding: $299,021 Eisenhower funds

Participants: 650 teachers

Program description: Demonstration centers are developed at the district level in a school in which a talented science teacher gives demonstrations during regular school hours to science teachers of a given grade level from adjacent schools. An assistant to the teacher demonstrator takes charge of the students while the teacher leads the demonstrations. Technical assistance is provided to other teachers on specific themes after the regular school hours.

Major activities: Classroom demonstrations offered by a teacher demonstrator and direct assistance to teachers through short workshops after school hours.

Program continuation or replication: There are eight sites for demonstration centers during the 1991-92 school year. An extension of five more is expected for the 1992-93 school year.

RHODE ISLAND

Agency: local education agency

Program name: Family Math

Grade levels: elementary school

Agency: South Kingstown School Department

Contact person: John Harrington

Telephone: (401) 792-9652

Purpose of program: To provide methods, materials and strategies for teachers to use in training parents; and to develop a positive attitude toward mathematics through an activity-based program at home.

Funding: $3,095 Eisenhower funds

Participants: 20 teachers

Program description: Teachers received inservice training in Family Math methodology originally developed at Lawrence Hall of Science of the University of Southern California at Berkeley. The forty-five hours of training included supervision as a trainer of parents.

Major activities: As above: classroom work and practicum.

Program continuation or replication: The project has been conducted for two years and will likely be run again in FY 1993 for another group of teachers. Several districts have adopted it.

RHODE ISLAND

Agency: state education agency

Program name: TIMES^2 (To Improve Mathematics, Engineering and Science Studies)

Grade levels: high school

Agency: Providence School Department

Contact person: Mary Sylvia Harrison

Telephone: (401) 272-5094

Purpose of program: To develop curriculum units in mathematics that will foster pride among black, Hispanic and Native American students; and to increase awareness in teachers of methodologies that facilitate learning with minority students.

Funding: $7,500 Eisenhower funds

Participants: 1 administrator, 6 teachers, 9 students

Program description: A consultant was hired to develop forty curriculum units which follow a standard geometry curriculum outline. Teachers' reviews of the units reported that they were of high quality, very creative and thought provoking and that they provided a good historical base and bibliographic reference.

Major activities: Curriculum units were developed and "test-marketed" with selected teachers in Providence.

Program continuation or replication: This project itself was a continuation and refinement of the previous year's activities focusing on algebra. TIMES^2 is an ongoing program which has been supported, in small part, with Eisenhower funds at various times in its more than ten years of existence.

RHODE ISLAND

Agency: higher education agency

Program name: Program for Excellence in Teaching Physical Sciences

Grade levels: middle/junior high school, high school

Agency: University of Rhode Island

Contact person: John V. Long

Telephone: (401) 792-4149

Purpose of program: The project had four primary goals: 1) to extend the content knowledge of teachers; 2) to involve teachers who do not usually participate in professional development activities; 3) to revitalize the teaching of physical science; and 4) to foster new relationships between science teachers and university scientists.

Funding: $11,600 Eisenhower funds

Participants: 104 teachers

Program description: The program provided teachers with current discipline-based workshops and short courses on topics in the physical sciences. Courses were taught by scientists at the University of Rhode Island and by leading science teachers in the state.

Major activities: Primary activities included teaching six courses on current topics in physics, geology and chemistry. One course focused on methods for developing middle school science laboratory exercises.

Program continuation or replication: The program has been replicated every year since 1985; and will most likely continue to be repeated because it has been well received by teachers. It provides science teachers with opportunities to expand their knowledge and teaching skills. Many of the courses show teachers hands-on techniques of teaching science that stimulate the interest of students and teachers in new ways.

SOUTH CAROLINA

Agency: local education agency

Program name: Greenville County Graphics Calculator Project

Grade levels: middle/junior high school, high school

Agency: School District of Greenville County

Contact person: Linda White Gunnells

Telephone: (803) 241-3203

Purpose of program: To train secondary mathematics teachers in integrating the graphics calculator into mathematics instruction. The focus of the training is on mathematics; the calculator is used only as a tool for teaching mathematics.

Funding: $20,000 Eisenhower funds

Participants: 100 teachers

Program description: 1) Graduate courses: Using the Graphics Calculator in Precalculus Mathematics, Using the Graphics Calculator in Precalculus Mathematics (video); 2) Precalculus, Mathematics, Geometry, Tech-Prep Mathematics; 2) summer workshop: Calculator Camp: Teaching 8-12 Mathematics with a Graphics Calculator; and 3) specialized training: Hewlett Packard Calculator Grant Training and the Woodrow Wilson Institute.

Major activities: Each participant is required to conduct a follow-up inservice in his/her school on some aspect of the training received.

Program continuation or replication: Now that teachers are becoming more comfortable with the graphics calculator as a tool, they have requested that the program follow-up this phase with in-depth workshops, conducted by teachers, on specific topics in geometry, algebra or precalculus where teachers have used the calculator most effectively. This response by teachers shows that they are feeling empowered by the technology and will, in turn, empower their peers and most importantly, their students.

SOUTH CAROLINA

Agency: state education agency

Program name: South Carolina Maps and Photographic Systems

Grade levels: elementary school, middle/junior high school, high school

Agency: South Carolina Department of Education

Contact person: Peggy Cain

Telephone: (803) 734-8376

Purpose of program: To heighten student appreciation for the diversity of the state's geological formation, which has shaped the landform and influenced historical events and cultural development.

Funding: $18,000 Eisenhower funds

Participants: 150 teachers

Program description: A series of high altitude infrared photographs, complemented with accompanying topographic and special purpose maps of South Carolina were used to develop curriculum materials entitled South Carolina Maps and Aerial Photographic Systems (SC MAPS). Topics included were: 1) geologic events and the five landform regions that shape South Carolina; 2) drainage system and landform regions that have impacted on the state's historical events and cultural diversity; 3) economic trends and regional differences that have resulted in the diversity in the state's manufacturing and industries, tourism, and agriculture products; and 4) preservation of the state's natural and cultural heritage.

Major activities: Developed as an interdisciplinary set of curriculum activities, SC MAPS uses cooperative learning techniques throughout the study sites. Because it is designed to be team taught, two-day SC MAPS instructors' workshops are held at on-site locations across the state for four member instructional teams. These staff development opportunities introduce teams to the state's geological formation and historical events shaped by the state's physical features.

Program continuation or replication: A natural continuation of SC MAPS is to add a story telling component for language arts students enhancing the team teaching concept. Students would learn the art of story telling by using folk tales from a variety of cultures. Introducing this type of innovative component would create student awareness and appreciation for the cultural diversity of the state.

SOUTH CAROLINA

Agency: higher education agency

Program name: Science and Computers for Young Children

Grade levels: elementary school

Agency: University of South Carolina

Contact person: Danny McKenzie

Telephone: (803) 777-4265

Purpose of program: To introduce young rural school children ages four through eight to basic concepts of science and computer technology by helping rural school teachers develop skills and materials in teaching science and technology.

Funding: $45,775 Eisenhower funds

Participants: 31 teachers, 14 students

Program description: Through a graduate level course, Selected Topics in Teaching Science, thirty-one teachers developed fifty-eight lessons for teaching science and technology to K-3 students. These lessons were then presented by the teachers to colleagues enrolled in a second graduate course, Science and Computers for Young Children. The lessons were then field-tested by ten of the original thirty-one teachers. In addition, participants planned and conducted three parent information sessions during which K-3 students presented science concepts to their parents through activities and demonstrations.

Major activities: 1) Development of science and technology units; 2) presentations by teachers to colleagues enrolled in the Science and Computers for Young Children course; 3) field-testing of units; 4) parent presentations and conferences; 5) final revisions of units and expert review of units and take-home science packet.

Program continuation or replication: A teacher sourcebook, *Science Process Skills for Young Children*, was produced and distributed to grant participants and may be duplicated and distributed by any school district. Copies of the sample lessons developed during the grant were distributed to teachers attending a session at the South Carolina Science Council meeting. The project director will continue to use materials developed during this project in his classes.

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SC

SOUTH DAKOTA

Agency: higher education agency

Program name: Lakota Elementary Science Education Project

Grade levels: elementary school

Agency: Sinte Gleska University

Contact person: Leland Bordeaux

Telephone: (605) 856-2886

Purpose of program: To empower teachers to have the confidence and competence to develop culturally-based hands-on discovery science units for elementary grades.

Funding: $23,058 Eisenhower funds
$200,000 other funds
$223,058 total funds

Participants: 123 teachers

Program description: Teachers received thirty hours of science content through participation in hands-on, discovery science activities presented by science educators and Native American model teachers. Participants developed culturally-based curriculum lessons. The best of these lessons will be published and disseminated by the South Dakota SSI project.

Major activities: 1) Two-week summer inservice that teaches science content and exposes teachers to experience of writing hands-on discovery science units; 2) twenty South Dakota teachers will meet four times during the year to discuss materials and share ideas; and 3) publication of best culturally-based activities.

Program continuation or replication: The South Dakota SSI project will publish the best culturally-based hands-on activities and disseminate them throughout the state.

TN

TENNESSEE

Agency: local education agency

Program name: Equity 2000

Grade levels: high school

Agency: Metro Nashville/Davidson County Schools

Contact person: Helen Schley

Telephone: (615) 259-8681

Purpose of program: To help middle and high schools increase the number of academically prepared minority and disadvantaged students who will enter and graduate from college.

Funding: $30,000 Eisenhower funds
$70,000 other funds
$100,000 total funds

Participants: 65 teachers

Program description: Eisenhower funds are providing teacher training in an academy environment.

Major activities: Teacher training, guidance training, mentoring/tutoring, community involvement and research/evaluation.

Program continuation or replication: The inclusive scope of the project is to address systemwide targeted needs.

TENNESSEE

Agency: state education agency

Program name: Academy for Teachers of Science and Mathematics

Grade levels: elementary school, middle/junior high school, high school

Agency: University of Tennessee

Contact person: Ken Monty

Telephone: (615) 974-3594

Purpose of program: To expand the insight of teachers into the fundamental nature of scientific knowledge, the origin of ideas, and the intellectual approach of researchers.

Funding: $125,000 Eisenhower funds
$275,000 other funds
$400,000 total funds

Participants: 73 teachers

Program description: The fundamental method of the academy was to immerse the participants in a series of hands-on experiments involving a number of sub-disciplines of science and mathematics under the guidance of researchers in those fields.

Major activities: Each participant generated a detailed proposal describing something suggested by the academy experience they would like to do in their own classrooms. Participants also generated and shared short descriptions of successful classroom practices.

Program continuation or replication: The project is to be replicated each year from 1992 to 1995.

TENNESSEE

Agency: higher education agency

Program name: A Delivery and Support System for Operation Physics

Grade levels: elementary school, middle/junior high school

Agency: Nashville Tech

Contact person: Robert S. McDow

Telephone: (615) 353-3363

Purpose of program: To improve the number and quality of physics topics that are taught in the fourth through eighth grades using Operation Physics, a national program of AIP.

Funding:
$28,999 Eisenhower funds
$9,100 other funds
$38,099 total funds

Participants: 10-12 administrators, 500 teachers

Program description: The project consists of providing three-hour inservice training in hands-on physics activities suitable for the fourth through eighth grade classroom. The written materials are from AIP and other materials are inexpensive and readily available. The middle Tennessee Operation Physics team was trained by AIP in 1989.

Major activities: During 1990-1991 slightly over 575 units of instruction were delivered to almost 300 teachers. This was thirty percent more than the number proposed because of substantial cooperation from local school systems across Tennessee.

Program continuation or replication: Since national training is now complete except for a few states, leaders in each state are encouraged to train other qualified teachers to deliver workshop activities. During the week of July 13, 1992, four new teams were trained in five of the thirteen available topics. All materials used in training will be retained by the new teams for use in presentations to other teachers. These new teams are strategically chosen to maximize their effectiveness.

TEXAS

Agency: local education agency

Program name: Delta Area Elementary Mathematics Enhancement Project

Grade levels: elementary school (grades 2-5)

Agency: La Villa Independent School District

Contact person: Sam B. Gonzales

Telephone: (512) 262-4755

Purpose of program: To enhance and provide hands-on activities and promote higher order thinking skills for language or educationally disadvantaged students.

Funding:
$47,868 Eisenhower funds
$6,000 other funds
$53,868 total funds

Participants: 45 teachers

Program description: A consortium of three school districts participated in a miniseries of workshops pertaining to mathematics objectives that many students in the delta area perceive as difficult, such as fractions, geometric problems, primes and composites, and word problems. Forty-five grade 2-5 teachers were trained.

Major activities: Teachers completed a preliminary survey which included questions on their educational background and on mathematics and science instruction. Seventeen workshop sessions were conducted by Dr. Olga Ramirez from the University of Texas at Edinburg. Teachers received a schedule of the workshops and the topics to be covered in advance. Dr. Sylvia Taube of the University of Texas at Edinburg conducted the evaluation of the project.

Program continuation or replication: Resources needed for replication are hands-on materials and guidelines for project activities.

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TX

TEXAS

Agency: state education agency

Program name: Texas Mathematics Staff Development Program

Grade levels: elementary school, middle/junior high school, high school

Agency: Texas Education Agency

Contact person: Bill Hopkins

Telephone: (512) 463-9585

Purpose of program: To provide a basic foundation for teaching the essential mathematics elements at all grade levels using manipulative materials, concept development techniques, problem solving applications and technology through modules.

Funding: $439,399 Eisenhower funds

Participants: 16,000 teachers

Program description: The project provides for the development and implementation of teacher training modules for PK-12 mathematics teachers. These modules offer teachers the opportunity for short-term staff development (twelve to thirty hours) to enhance their skills. Each module addresses a particular topic at a specific grade level span.

Major activities: Major activities include module workshops, week-long institutes for precalculus teachers and training for college mathematics and mathematics education faculty members.

Program continuation or replication: Necessary resources for replication include training materials and a person to coordinate training.

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TEXAS

Agency: higher education board

Program name: Minority Mathematics and Science Education Cooperative (MMSEC)

Grade levels: elementary school,

Agency: Texas Higher Education Coordinating Board

Contact person: David T. Garza

Telephone: (512) 483-6222

Purpose of program: To increase elementary teachers' knowledge of fundamental mathematics and science concepts and principles; improve teaching practices; and strengthen teachers' understanding and appreciation of their culturally diverse students as apt learners through a statewide partnership of eight universities and colleges, sixteen predominantly minority elementary schools and eleven school districts.

Funding: $1,684,542 Eisenhower funds
$954,614 other funds
$2,639,156 total funds

Participants: 37 administrators, 536 teachers, 10,616 students

Program description: MMSEC offers an integrated model that systematically enhances teacher preparation in mathematics and science education. MMSEC fosters a learning process that updates cognitive knowledge and teaching practice in life/earth science, physical science and mathematics and combines this with new understanding of the educational implications of cultural, attitudinal, contextual factors, gender and ethnic expectations, student achievement, contextual and cultural learning and parental involvement. The teacher is thus provided greater resources to engage the minority and disadvantaged child more productively in learning.

Major activities: Three staff development training activities occur annually: 1) summer trainers institute; 2) monthly school-based staff development training; and 3) university level summer school courses in mathematics and science for elementary teachers.

Program continuation or replication: Fourth-year evaluation and assessment of the MMSEC program will define the direction and/or continuation of any future staff development efforts. Meanwhile, several current MMSEC schools have already begun to establish links to other local schools in order to provide their faculty with peer coaching in basic features of the MMSEC model. The demand for MMSEC training from schools with large minority student populations is particularly great.

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UT

UTAH

Agency: higher education agency

Program name: Inservice Mathematics for Elementary Teacher/Leader Specialist (IMETS)

Grade levels: elementary school

Agency: University of Utah

Contact person: Donald D. Clark

Telephone: (801) 254-6267

Purpose of program: To develop elementary teachers to be teacher/leader specialists in mathematics. The training will be in mathematics content and pedagogy. These teachers will be able to provide this training to others within their districts.

Funding: $40,000 Eisenhower funds

Participants: 57 teachers

Program description: IMETS provides an opportunity for teachers to obtain mathematics training that exceeds that of most elementary teachers. These teachers will work as elementary teacher specialists as well as be endorsed to teach K-8 mathematics courses. Teachers who want to participate in the IMETS program are identified and enrolled in summer courses that will bring them to the preservice content level in mathematics which includes advanced algebra. During the academic year, a number theory, algebra and geometry course designed for elementary teachers will be taught.

Major activities: The program emphasizes mathematics content, pedagogy, and the NCTM standards. All teachers will obtain the equivalent content training required to teach algebra in the secondary schools. Upon completion, a mathematics specialist listing is added to the teaching certificate of each teacher.

Program continuation or replication: Several of the larger school districts have set up preparation workshops to get the teachers ready for IMETS. Two of the teacher training universities now have an approved teacher training specialist program in mathematics besides the University of Utah, and a third is in the application process. The number of participants appears as though it will double at the University of Utah for the 1992-93 school year.

UTAH

UT

Agency: higher education agency

Program name: Development of a Model Science Elementary School

Grade levels: elementary school

Agency: Utah State Board of Regents

Contact person: Cordell Perkes

Telephone: (801) 626-6283

Purpose of program: 1) To implement a model science program in a culturally diverse school in an urban district; 2) to provide a model program for undergraduate science methods students; and 3) to develop teacher leaders in science to train teachers in other schools in the district.

Funding:
$13,939 Eisenhower funds
$4,695 other funds
$18,632 total funds

Participants: 1 administrator, 20 teachers, 120 preservice students, 400 students

Program description: This program is an attempt to develop one elementary school as a model for science instruction. Also, it is an attempt to integrate prospective teachers in training regarding hands-on science.

Major activities: Six inservice training sessions for all elementary teachers in a school were conducted. Hands-on science activities used approximately $2,000 in science materials. College preservice science methods students observed inservice training and practiced teaching in a classroom.

Program continuation or replication: Ten teachers from other elementary schools within the district will observe science instruction in the model school. In addition, five teachers from the model school will visit other district schools to disseminate information about the model program.

VERMONT

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VT

Agency: local education agency

Program name: School Restructuring: Creating a Workable Model for Rural High Schools

Grade levels: middle/junior high school, high school

Agency: Addison Northeast Supervisory Union

Contact person: John Vibber

Telephone: (802) 453-3809

Purpose of program: 1) To educate the science staff, school board and community on the NSTA's SS&C project; and 2) to begin developing curriculum to teach every science every year.

Funding:
$5,500 Eisenhower funds
$1,200 other funds
$6,700 total funds

Participants: 9 teachers

Program description: The project was a series of activities and experiences designed to expose science teachers, school board members, parents, and teachers from other schools to the potential advantages of teaching every science ever year in a coordinated series of activities and experiences as recommended by the NSTA. The purpose was to build support for significant change and to establish a process by which that change would subsequently occur.

Major activities: The project started with meetings designed to investigate the SS&C idea. Teachers went as a team to the NSTA national convention to update their knowledge of integrated science. To disseminate intentions, the teachers presented a conference to invited parents, school board members, and teachers from other schools which featured an outside expert on SS&C and a panel representing business, university, and our state department of education. In the last phase of the project, staff members worked as a team to write the first curricular units intended to integrate the sciences.

Program continuation or replication: The first curricular units will be taught during the next school year. They will displace existing units as teachers attempt to teach fewer topics, but in more detail. Each year will still have a major emphasis such as biology or earth science, but because new units contain concepts from biology, earth science, physics and chemistry, a number of topics will be taught repeatedly in a learning spiral. If successful, further units will be developed for subsequent introduction.

VERMONT

VT

Agency: state education agency

Program name: Food Works: The Common Roots Program

Grade levels: elementary school

Agency: Vermont Department of Education

Contact person: Joe Kiefer

Telephone: (802) 223-1515

Purpose of program: The purpose of the Common Roots Program is to provide a framework for reinventing schools as agricultural demonstration and ecological research centers benefiting the entire community. At the core of this integrated science program is the goal of empowering students through practical life skills that cultivate a sustainable life-style.

Funding: $7,500 Eisenhower funds

Participants: 4 administrators, 55 teachers

Program description: The program inspires students, parents and community members to explore and recreate their common roots of local heritage, agriculture, and ecology. This integrated, hands-on science approach provides opportunities for K-6 students to follow their natural curiosity through inquiry and exploration of the environment. The seven-year, developmental journey follows the cycle of the seasons, creating a living curriculum that is meaningful to the child and relevant to the world.

Major activities: K-6 Integrated Science Projects, Ecology Action Research Stations (EARS) and historical theme gardens form the foundation of the Common Roots Program. The K-6 Integrated Science Projects differ for each grade and are driven by student inquiry. Each grade's theme includes research, experiments, and final presentations. EARS provides opportunities for students to channel their feelings and concerns about the earth through positive action. In the historical theme garden, science and social studies comes to life. In addition, students move through the agricultural history of their region, from the Native American garden to the sustainable garden of the future.

Program continuation or replication: Participants are collaborating with a higher education consortium to develop a Vermont Institute for Integrated Education which will focus on preservice, inservice and fifth-year teacher training. Participants are seeking to develop regional demonstration schools where trained teachers can guide other teachers in sustaining the process of school change.

VERMONT

VT

Agency: higher education agency

Program name: A Program for Science Interdisciplinary Teaching Across the Curriculum

Grade levels: middle/junior high school

Agency: Saint Michael's College Biology Department

Contact person: Arthur C. Hessler

Telephone: (802) 654-2626

Purpose of program: 1) To improve teachers' content knowledge in science; 2) to provide a model of a hands-on, interdisciplinary approach to science teaching; 3) to suggest ways in which ties with the community can be strengthened; and 4) to introduce some ways in which computers can be used effectively in science teaching.

Funding: $23,700 Eisenhower funds

Participants: 1 administrator, 20 teachers, 4 community members

Program description: The project was designed to improve the participants' science content knowledge, build their confidence in their ability to teach science, foster interdisciplinary teaching of science, introduce computer applications to teaching, and encourage reports to the community on interdisciplinary science training and student learning.

Major activities: The primary focus of this training was the content of environmental science as a learning/teaching discipline and included sampling and identification techniques, comparative sample analyses and an understanding that biological diversity is a variable that is, at least in part, determined by physical factors of the water environment. Proper collection of data and effective presentation of these data for decision making are essential skills which teachers and students need to enhance learning.

Program continuation or replication: Project will be repeated during the summer of 1992.

VIRGINIA

VA

Agency: higher education agency

Program name: Integrated Physical Science and Mathematics Institute for Elementary School Teachers, Grades 3-5

Grade levels: elementary school

Agency: Mary Washington College

Contact person: George King, III/ Marie Sheckels

Telephone: (703) 899-4747/(703) 899-4564

Purpose of program: To improve the skills of elementary teachers in mathematics and science. Teachers will be introduced to many familiar topics and provided with more content and strategies for introducing these concepts in different ways.

Funding:
$34,179 Eisenhower funds
$8,472 other funds
$39,651 total funds

Participants: 24 teachers

Program description: This project is a one-year inservice designed to improve the teaching skills in the physical sciences and mathematics for twenty-four grade 3-5 teachers. Teachers will participate in a two-week workshop course which will emphasize content, hands-on activities and teaching strategies. During the regular school year, participants will be required to conduct workshops, individually or in teams, at their respective schools.

Major activities: Physical sciences: light, simple machines, sound, fluids, temperature and heat. Mathematics: problem solving, measurements, geometry and spatial sense, variables, data collection and analysis.

Program continuation or replication: This is the second phase of this project which was funded last year with Eisenhower funds.

VIRGINIA

▼ VA

Agency: state education agency

Program name: V-QUEST (Virginia's SSI Project in partnership with the Eisenhower Program)

Grade levels: elementary school, middle/junior high school, high school

Agency: Virginia Department of Education

Contact person: Joe Exline

Telephone: (804) 225-2876

Purpose of program: To ensure that quality education in mathematics and science is available to every child in the Commonwealth and that mathematics and science achievement is manifested through demonstrated understandings of: conceptual connections, inquiry, problem solving, decision-making, appropriate scientific attitudes, the interdependence of technology, mathematics and science.

Funding: $183,000 Eisenhower funds

Participants: 25 administrators, 50 teachers

Program description: The Eisenhower team, consisting of the Eisenhower state coordinator and the mathematics and science specialists at the Virginia Department of Education supported the following objectives for the reform initiative: communication, teacher training, curriculum and instruction, assessment, integration of technology, local administrative leadership and support, increased participation in mathematics and science and community involvement.

Major activities: In addition to other activities, members of the Eisenhower team worked to identify program components that would effectively bring about reform. Included were 1) school-based mathematics and science lead teachers; 2) new preservice and inservice models; 3) instructional materials; 4) assessment reform; 5) local educational leadership/administrative support; 6) community action campaign; and 7) support for mathematics and science education through telecommunications.

Program continuation or replication: This is a long-term project supported through both Eisenhower and NSF funds.

WASHINGTON

Agency: state education agency; higher education agency

Program name: Mathematics/Science Course Bulletin

Grade levels: elementary school, middle/junior high school, high school, graduate level

▼ WA

Agency: Eastern Washington University

Contact person: Michele Opsal

Telephone: (509) 359-2286

Purpose of program: To serve as a clearinghouse of current information on course offerings, workshops and inservice educational opportunities for Washington state teachers of mathematics and science.

Funding: $68,954 Eisenhower funds

Participants: 30,000 administrators and teachers

Program description: The bulletin provides hard copy data to each school building in the state (2,400) on at least a one per month basis. Information included is related to a wide variety of professional development opportunities for K-12 teachers of mathematics and science.

Major activities: Activities required the acquisition of course offering data from a wide variety of sources, both in-state and out-of-state. The information is then assembled in a bulletin/newsletter format and is sent to the entire K-12 statewide school system.

Program continuation or replication: The project will continue to compete for higher education monies to perpetuate this service and to increase the quality of the database and its usability.

WEST VIRGINIA

Agency: local education agency

Program name: Math Their Way Program

Grade levels: elementary school

WV

Agency: Hampshire County Schools

Contact person: Paula J. O'Brien

Telephone: (304) 822-3528

Purpose of program: To use manipulative materials and activity centered learning in kindergarten through second grade. The program encourages thinking, understanding, and creativity as well as mastery of basic skills.

Funding:
$2,972 Eisenhower funds
$204 other funds
$3,176 total funds

Participants: 1 administrator, 24 teachers, 13 para-professionals

Program description: Math Their Way is a supplemental mathematics program for grades K-2. Teachers attended a one-day workshop and received a stipend or one-day staff development credit. They also received free materials to start their own Math Their Way program in their classroom.

Major activities: Concepts covered in the workshop were free exploration, numbers, measurements, patterning, sorting and classifying, comparing, counting, graphing and problem solving.

Program continuation or replication: Purchasing of additional materials to further implement this program in K-2 classrooms.

WEST VIRGINIA

Agency: state education agency

Program name: Rock Formations of North Eastern United States

Grade levels: elementary school, middle/junior high school, high school

Agency: Marion County Schools

Contact person: Diane Furman

Telephone: (304) 367-2100

Purpose of program: To improve teacher qualifications and skills by developing activities and methods that directly relate to the teaching of K-12 science.

Funding: $14,000 Eisenhower funds

Participants: 40 teachers

Program description: Robert Behling of West Virginia University conducted a five-day, four-night traveling graduate class, Rock Formations of North Eastern United States. This course continues a five-year program to update the earth science content area for K-12 science teachers of Marion County. Other traveling courses have included: Marine Biology, In Search of Glaciers, In Search of Dinosaurs and Environmental Geology.

Major activities: Day 1: Quartz sites in Chambersburg, PA and tour of anthracite mine in Scranton. Day 2: North Creek Garnet Mine, New York. Day 3: Vermont marble exhibit, Barre granite site. Day 4: Rock collecting in New York areas of Albany-Manchester Center.

Program continuation or replication: With each traveling class, the teachers must develop activities/lessons to implement the curriculum the following school year. These lessons are bound and circulated to all participants as well as through presentations at state level workshops.

WEST VIRGINIA

Agency: higher education agency

Program name: Path to Mathematics and Science

Grade levels: middle/junior high school

WV

Agency: Fairmont State College

Contact person: Elizabeth W. Frye

Telephone: (304) 367-4621

Purpose of program: To increase middle school teachers' knowledge of mathematics and chemistry or physics and assist the teachers in the integration of a hands-on approach to raise students' interest in and understanding of these subjects.

Funding:
$14,910 Eisenhower funds
$3,500 other funds
$18,410 total funds

Participants: 20 teachers, 60 students

Program description: The project involved one week of inservice training for twenty teachers (hands-on integration of mathematics and chemistry or mathematics and physics). The teachers then spent one week teaching what they learned to sixty minority and/or disadvantaged students. Since the program was held at Fairmont State College, students were exposed to college facilities and to college as a step in career paths.

Major activities: Teachers were given content in mathematics and chemistry or in mathematics and physics. They were shown hands-on approaches for integrating the two topics into classroom instruction. Teachers and students spent four hours per day in mathematics and science labs learning by doing.

Program continuation or replication: This project will be offered in 1992 to teachers and students from a five county area.

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WISCONSIN

Agency: local education agency

Program name: Cray Academy

Grade levels: elementary school, middle/junior high school, high school

Agency: Cray Academy

Contact person: Julie Stafford

Telephone: (715) 723-1181

Purpose of program: The Cray Academy is designed to help K-12 educators increase their knowledge of science, mathematics and technology teaching strategies to provide better learning experiences for their students.

Funding:
$50,000 Eisenhower funds
$100,000 other funds
$150,000 total funds

Participants: 900 teachers

Major activities: More than 900 K-12 classroom teachers will take part in the two-week 1992 Cray Academy. Through the series of workshops offered, teachers develop an increased understanding of concepts presented through hands-on, critical thinking, problem solving, cooperative learning, application, and demonstration activities encouraging integration of mathematics, science and technology education. They also gain new practical teaching strategies and knowledge of new, simple and inexpensive materials for classroom applications.

Program continuation or replication: Workshops in mathematics emphasize problem solving, manipulatives, estimation and mental computation, as well as integrating computers into the curriculum. Science-related workshops offer hands-on activities in astronomy, biotechnology, water quality and the integration of computers and emerging technologies into the science curriculum. Technology workshops include children's engineering design technology, elementary and middle school technology, photonics, fiber optics, applied mathematics, graphic communications and principles of technology. Representatives from more than seventy regional businesses join Cray managers, engineers, technicians and human resource personnel in structured discussions and field trips to local industries.

WISCONSIN

Agency: state education agency

Program name: Science World

Grade levels: elementary school, middle/junior high school, high school

Agency: Wisconsin Department of Public Instruction

▼ WI

Contact person: Mary Kay York

Telephone: (608) 267-9270

Purpose of program: To stimulate student interest in science by encouraging them to take higher level science courses in high school, and to pursue science related careers after they graduate from college. For teachers, Science World provides a professional development opportunity to revitalize their interest and techniques in teaching science and updates in current research and curricular developments and encourages the teachers to become leaders in the science education community.

Funding:
$63,000 Eisenhower funds
$187,000 other funds
$250,000 total funds

Participants: 90 teachers, 384 students

Program description: Science World is a summer enrichment program for eighth grade students and for science teachers at all grade levels. The student component of Science World is designed to provide the participants with experiences in science that will motivate them to take more science courses in high school and to pursue science-related careers. The teacher component is designed to motivate teachers by providing them the opportunity to work with other teachers and science educators in a variety of activities related to effective science instruction.

Major activities: Each of the six one-week sessions allows sixty-four students, thirty-two girls and thirty-two boys, to pursue their interest in science with six staff teachers and six teaching assistants. Though Science World is highly structured, students have a chance to meet and discuss issues with teachers, scientists, and technologists; to work independently or with other students on assigned projects; or to participate in recreational activities.

Program continuation or replication: The program has been in existence for ten years and is expected to continue. Current plans include replicating the program in the large urban area of Milwaukee, and creating an Urban Science Mathematics World with the same program design as Science World to meet the needs of the underrepresented, underserved populations.

WISCONSIN

Agency: higher education agency

Program name: Mathematics and Science Teachers' Business and Industry Awareness Project

Grade levels: elementary school, middle/junior high school, high school

Agency: Marquette University

Contact person: John C. Moyer

Telephone: (414) 288-5299

WI

Purpose of program: To sensitize mathematics and science teachers to the skills, concepts and techniques used in business and industry; and to provide supportive opportunities for teachers to develop classroom activities which reflect those critical skills, concepts and techniques.

Funding: $39,448 Eisenhower funds
$190,462 other funds
$239,400 total funds

Participants: 30 teachers, 1,500 students

Program description: This program places science and mathematics teachers in internship positions within Milwaukee area businesses and industries for work experiences during the summer. It also provides a university-based course in curriculum issues needed to motivate and empower the teachers to create classroom materials based on their internship activities.

Major activities: 1) Six-week summer internships, 2) three-credit course during the fall semester, 3) follow-up sessions in February and March and 4) publication and dissemination of activity units developed.

Program continuation or replication: This is the third year for this project. No specific plans for continuation or replication have been made at this time.

WYOMING

Agency: local education agency

Program name: Expanding Your Horizons in Science and Mathematics

Grade levels: middle/junior high school, high school

Agency: Laramie County School District # 1

Contact person: Eleanor Grinnell

▼ **Telephone:** (307) 771-2432

WY **Purpose of program:** 1) To encourage girls to take more mathematics and science classes to better prepare them for more expanded career options; 2) to educate parents as to the importance of mathematics and science; and 3) to assist teachers in making "work world" connections to mathematics and science.

Funding: $16,000 Eisenhower funds

Participants: 6 administrators, 31 teachers, 456 students, 79 parents

Program description: This program offers a hands-on career fair for young women in grades 5-12, their parents, teachers and counselors. Women who are working in the areas of mathematics, science, technology and nontraditional career field present forty-five minute hands-on workshops. Students choose two workshops and are assigned two by computer.

Major activities: Last year, sixty-nine presenters worked with 469 students from across the state of Wyoming in hands-on presentations. The major focus was to encourage girls to take more mathematics and science. The program also provided role models and personal career histories related to their fields.

Program continuation or replication: The program now has four sites in Wyoming which will host conferences in the 1992-93 school year, and plans to add a fifth site in the fall of 1993.

WYOMING

Agency: higher education agency

Program name: Mathematics and Science Teachers Hotline (MAST)

Grade levels: elementary school, middle/junior high school, high school

Agency: University of Northern Colorado

Contact person: David Pringle/Lori Reinsvold

Telephone: (303) 351-1512

▼
WY

Purpose of program: To provide K-12 mathematics and science teachers of Colorado and Wyoming with a free resource service.

Funding:
$7,551 Eisenhower funds
$32,532 other funds
$40,083 total funds

Participants: All teachers in Wyoming and Colorado.

Program description: All K-12 mathematics and science teachers of Colorado and Wyoming access the MAST Hotline through an 800 number. Teachers leave their mathematics and science questions with the Hotline's research specialist. The research specialist seeks information for the questions through the resources in the Hotline's office or the university's library. When more difficult questions arise, the research specialist has access to the 280 resource volunteers in industry, academia, and government agencies throughout Colorado and Wyoming. The research specialist strives to have answers for the teachers in forty-eight hours.

Major activities: The Hotline provides authoritative answers to teachers' content and pedagogy questions. Through the MAST Hotline, teachers can leave their questions for the staff, leave e-mail for other teachers, as well as share successful classroom activities and resources. Other on-line information about workshops, conferences, and summer opportunities is also available.

Program continuation or replication: Since the MAST Hotline began in 1988, the service has been funded by Colorado funds for four years and Wyoming funds for two years. The University of Northern Colorado supports the coordinator/research specialist. Additional funds are also provided by US WEST. As of the fall of 1992, the Hotline has been asked by Mid-Continental Regional Educational Laboratory (McREL) to serve a region of seven states, including Colorado and Wyoming. The expansion is due to a grant McREL has received.

WYOMING

Agency: state education agency

Program name: Learner Outcomes and Alternative Assessment Project

Grade levels: elementary school, middle/junior high school, high school

Agency: Wyoming Department of Education

Contact person: William Futrell

Telephone: (303) 777-6234

WY

Purpose of program: To help teachers focus on global state outcomes in science and mathematics and assess higher level outcomes with alternate assessment techniques.

Funding: $10,000 Eisenhower funds

Participants: 25 administrators, 500 teachers

Program description: 1) Phase I: statewide committee developed global outcomes in science and mathematics; 2) the department of education in cooperation with the University of Wyoming disseminated and inserviced teacher populations; and 3) Phase II: inserviced teachers of K-12 mathematics and science in alternative techniques for assessing outcomes.

Major activities: 1) Writing conference, 2) statewide dissemination conference and 3) inservice workshops in strategic locations statewide.

Program continuation or replication: The program is being continued through the 1992-1993 school year with a concentration on the assessment phase.

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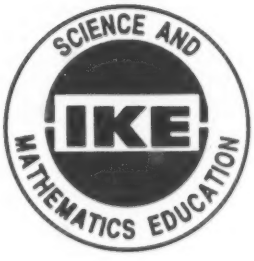

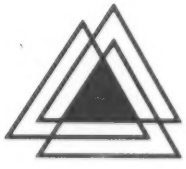

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